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Ƨ ĭþƍɫllɛNj ƛljFdžDžllɛ !ƨ5

مشروع تحسين وتطوير التربية العلمية في الأردن:

دراسة تحليلية تقويمية في ضوء مبادئ التعلم البنائي وعمليات العلم

A Project For Enhancement and Development Of Science Education In Jordan: An Analytical and Evaluative Study In The Light of Constructivism Principles and Science Processes

ƍɛƍYƋ

تماره عوض خضر العبيدالله

Ƹ ƐþƪƋ

الأستاذ الدكتور غازي ضيف الله رواقه

!2013/!2012

مشروع تحسين وتطوير التربية العلمية في الأردن:

دراسة تحليلية تقويمية في ضوء مبادئ التعلم البنائي وعمليات العلم

إعداد

تماره عوض خضر العبيدالله

بكالوريوس: معلم مجال علوم عامة، 2002

ماجستير: مناهج العلوم وأساليب تدريسها، 2006

قدمت هذه الأطروحة استكمالا لمتطلبات درجة دكتوراه الفلسفة في تخصص مناهج العلوم وأساليب تدريسها

جامعة اليرموك-اربد، الأردن

وافق عليها

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د. محمود حسن بني خلف .... عضوا

أستاذ مشارك في أساليب تدريس العلوم، جامعة اليرموك

تاريخ مناقشة الأطروحة 7 / 5 /2013م

الإهداء

إلى من كنت في قلبها خفقة .... وعلى لسانها دعاء
إلى من كانت لعيني النور ولقلبي الحياة ....
إلى حبي الكبير...أمي

إلى روح والدي.......................................رحمه الله
إن العين لتدمع، وإن القلب ليخشع، وإن على فراقك يا أبي لمحزونون.

إلى رفيق دربي .... زوجي

إلى الشموع التي أضاءت ظلام أيامي ....
إلى أبنائي ....آية وقصي

إلى من شاركوني الحياة بحلوها ومرها
إلى إخواني..................................لورنس ومحمودة
إلى أخواتي...............................ديالا وديمة ونسيم

إلى من تجلت فيهم معاني الإنسانية
أعمامي وخوالي...

إلى أساتذتي..........وزملائي.............وكل طالب علم

أهدي هذا الجهد المتواضع

الشكر والتقدير

يا ربنا لك الحمد كما ينبغي لجلال وجهك ولعظيم سلطانك، الذي بفضله وعونه تتم الصالحات وتحل المشكلات وتزول العقبات، والذي امتن علي بإنجاز هذا المجهود العلمي المتواضع، وصلي اللهم وسلم على عبدك ورسولك سيدنا محمد وعلى اله وأصحابه ومن استن سنته واهتدى بهداه، وبعد ......

فإنني أتقدم بخالص شكري وتقديري إلى أستاذي الفاضل الدكتور غازي رواقه الذي تفضل بالإشراف على رسالتي، حيث أمدني بمعرفته العلمية وزودني بخبرته الشخصية ومنحني وقته وجهده، فله مني جزيل الشكر وعظيم الامتنان وجزاه الله عني أحسن الجزاء.

كما أتقدم بالشكر والتقدير الى أعضاء المناقشة الأستاذة الدكتورة أمل عبد الله خصاونة، والأستاذ الدكتور إبراهيم فيصل رواشدة، والأستاذ الدكتور محمود طاهر الوهر، والدكتور محمود حسن بني خلف، الذين تكرموا بمناقشة هذه الرسالة وإبداء الملاحظات لإغنائها، فلهم مني كل الاحترام والعرفان، وأن يجزيهم الله عني خير الجزاء.

ولا يفوتني أن أتقدم بجزيل الشكر والعرفان إلى قسم المناهج والتدريس ممثلا بالهيئة التدريسية لما نهلت من علم ومعرفة طوال فترة دراستي في هذه الجامعة الغالية، وأخص بالذكر الأستاذ الدكتور عبدالله محمد خطايبة، والشكر موصول إلى الأستاذ الدكتور إبراهيم فيصل رواشدة، والأستاذ الدكتورغازي رواقة والدكتور محمود حسن بني خلف، والدكتورة وصال العمري، والدكتور راتب عاشور فلهم مني كل التقدير والإخلاص.

كما أتقدم بالشكر الجزيل إلى مدير التربية والتعليم الدكتور عمر سميرات والزميل الدكتور محمد القسيم والدكتورة ميساء الرجوب والمديرة الفاضلة بثينه مطاحنه والمعلمات والمعلمين لحسن استقبالهم ومعاملتهم وموافقتهم على تطبيق أدوات الدراسة في مدارسهم، واخص بالذكر حضرة المديرة الفاضلة نادية ديباجة، سائلا المولى عز وجل أن يمد في عمرهم وأن يديمهم سندا وذخرا لكل من يطلب العلم.

وأخيرا أشكر كل من ساهم وقدم لي المساعدة لانجاز هذا البحث وإخراجه بشكله النهائي واخص بالذكر السيد غسان العكور لمساعدته في التحليل الإحصائي، مكتبة الرافدين.

والله ولي التوفيق

قائمة المحتويات

قائمة الجداول

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61	[illegible] (SEED) [illegible]	(1) [illegible]
64	[illegible]	(2) [illegible]
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109	[illegible] (SEED) [illegible]	(24) [illegible]

قائمة الاشكال

قائمة الملاحق

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[illegible] (0.57) [illegible] (3.31) [illegible]

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الفصل الأول

خلفية الدراسة وأهميتها

مقدمة

[illegible] .(1993 [illegible])

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[illegible] (1995-1976 [illegible]) [illegible] .(2010 [illegible])

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[illegible] .(Barak & Shakhman, 2008)

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:(Boettcher,2007)[illegible]

1. [illegible]

2. [illegible]

3. [illegible]

Communication and technology (ICT) [illegible]

[illegible] Information

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[illegible] (2007 [illegible]):

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[illegible] (2011) [illegible] (Constructivism) [illegible].

[illegible]

(Lyons, Hoffmam, Krajicik,

.&Soloway,1997)

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[illegible] Science Education Enhancement & Development (SEED) [illegible] (JICA) [illegible] .(2009 [illegible])

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6. [illegible] Information Communication (ICT) [illegible] and Technology.

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Ǒù5 Ɫőďžǁz!ſ ƫőǁƧķ!ſ ƧőĂƱķĂ ǇőƪơķǍ ƽǁzķő ǤďžŏƼ ÜǇþƧǕſ Ŏ5 ĎžĂǁz!ſ Ŏďžǁzďž ăþ! ĭĂǁƧķ!ſ ƔőƧþķ!ſ

.ƗǁďžǤƚķďž!ſĂ Ɫőƪǥƪǖſ Ďžǁz!ſ ƘǤőǁďžƵĂ ǑſǤǇǁ!ſ Ďžǁzķ!ſ ƏþǤǁďžĂ ǇþƧǕſ

ĎžĂùǁz!ſ Ŏùďžǁzďž þſþùƵƍ ǋďžǤùǇƧǁĂ ƗďžǤƵ ǇőďžǁzďžŀſþþƵƍ ǋďžſƧǁ Ĭ!ƍ ǊƞĂďž!ſ þǀǇǁ! ſƐƱǇĂ

Ɫùőſ ǤǇǁ!ſ ƗùőƧƱǇ!Ǥǁ Ǉőùďžǁzďžŀſ ŎƵĂ ƻƶƴ Ǉďž (2002)ƧǋĂ!ſ ƗƪſƧþ Ǌő!ƍ Ƙǁƫ Ăķ ǤďžĂ ÜƗƫǤƤ

ƧǤƮ Ŏķ!ſĂ (2012) Ƨďžƶďž Ɨƪ ſƧþĂ ÜŎǁƚ!ſ ƧǤķƤǕſ Ɨďžǖ Ƶ Ǉďž %50 Ǉďž ýþƊ ſþƞ Ɨőǀþķďž Ɨǁƪǀǁ Ă

.ƗőſǤǇǁ!ſ ƗőƧƱǇ!Ǥǁ ǇőďžǁzďžŀſƗ5Ƨƶďž ŎǇþķ ƔǤǁƪƊ Ĭ!ƍ Ǥǌ!ǖƤ Ǉďž

Ďžùǌ5!ſĂ ýùőǁơķ!ſ Ǉďž þőƨďž ǅſƧƞƍ Ĭ!ƍ ŎďžƧķ Ŏķ!ſ þĂǌƞ!ſ Ǉőǁ Ǉďž ŎǊ Ɨƪ ſƧþ!ſ ǈƦǋ Ǉƪ5

Ǉùďž Ďžþǀķ Ŏķ!ſ ƘǤƵĂƶĂďž!ſ ăĂķơďž ýőǁơķĂ ÜĎžǁzďž!ſ þſþƵƍ Ŏ5 ƗőĂǁƧķ!ſ ƗőƧőĂƱķ!ſ ǋďžſƧǁ!ſ ýþſĂ!

Ɫőùƪǥƪǖſ Ďžùǁz!ſ ƘǤùőǁďžƵĂ ǑſǤǇǁ!ſ Ďžǁzķ!ſ ƏþǤǁďž! Ǉőďžǁzďž!ſ ǁǖ ķďžſ ƗƞƧþ Ĭǁ Ƶ ƻĂþĂ!ſĂ ÜǤǌ!ǖƤ

Ŏƪùőſ Ƨ!ſ ýƋǤƪùķ!ſ Ŏ5 Ɨƪ ſƧþ!ſ Ɨǁƚ Ƭďž þőþơķ Ďžķ ÜǊőǁƵĂ .Ʃ őƧþķ!ſ Ŏ5 ǤǌǀǇďž ǉþǤ5ķƪǓſĂ ƗǁďžǤƚķďž!ſĂ

:Ŏ!Ǥķ!ſ

ǅĂƴ Ŏ5 ÜǇþƧǕǤǁ Ďžőǁzķ!ſ Ŏ5 ĎžĂǁz!ſ Ďžǁzďž ǅſþƊ Ǉőƪơķ Ŏ5 (SEED) ƳĂƧƬďž Ɨőǁ ƵǤ5 Ǥďž"

Þ Ďžùǁz!ſ ƘǤùőǁďžƵĂ Ɫùőſ ǤǇǁ!ſ ƗőƧƱǇ!ſĂ (SEED) ƳĂƧƬďž! ǊőƧǤǌďž!ſĂ Ɨőƪőſ Ƨ!ſ ƧǤƚ5ǕſĂ ĎžőǊǤ5ďž!ſ

:Ɨő!Ǥķ!ſ ƘǕƋǤƪķ!ſ ýſƋƪ!ſ ſƦǋ Ǉďž ƳƧ5ķőĂ

ĎžǁzķùƧ!ſ ǅăþǤǁďž Ďžǌƚǖķďžſ ƗƞƧþ! (SEED) ƳĂƧƬďžǁ ǇőǀơǤǁďž!ſ ĎžĂǁz!ſ Ŏďžǁzďž ƘſƧőþǀķ Ǥďž -1

ÞŎſǤǇǁ!ſ

Ďžùǁz!ſ ƘǤőǁďžƵ Ďžǌķƪ ƧǤďžďž ƗƞƧþ! (SEED) ƳĂƧƬďžǁ ǇőǀơǤǁďž!ſ ĎžĂǁz!ſ Ŏďžǁzďž ƘſƧőþǀķ Ǥďž -2

ÞƗǁďžǤƚķďž!ſĂ Ɫőƪǥƪǖſ

Ǒù5 ŎſǤǇǁ!ſ Ďžǁzķ!ſ ǅăþǤǁďž (SEED) ƳĂƧƬďžǁ ǇőǀơǤǁďž!ſ ĎžĂǁz!ſ Ŏďžǁzďž ƻőƱĂķ ƗƞƧþ Ǥďž -3

ÞƗő5ƫ!ſ Ɨ5Ƨƺ!ſ

Ɨù˥ƧǴdždž Ăùơǈ Džùnjǐǚ Ʊ (SEED) YǍƧTdžǐ LJǒǀơǨǐdž!ƒ DžĂǐz!ƒ Ǒdžǐzdž NJǒηĂǩ ƗηƧƥ Ǵdž -4

ÞƗǐdžǴǂǩdž!ƒĂ Ɨǒ˥Ǵ˥Ǖƒ Džǐz!ƒ ƘǴǒǐdžƵ

Þ (SEED) YǍƧTdž Ǒ5 ǑƒǴǈǐ!ƒ DžǐzǨ!ƒ ƇăƥǴǐdž LJǒdž ư ǩ Ɨǐ˥ǈ Ǵdž -5

Þ (SEED) YǍƧTdž Ǒ5 ƗǐdžǴǂǩdž!ƒĂ Ɨǒ˥Ǵ˥Ǖƒ Džǐz!ƒ ƘǴǒǐdžƵ LJǒdž ư ǩ Ɨǐ˥ǈ Ǵdž -6

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9- [illegible]:

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10- [illegible]:

[illegible] (Constructivism) [illegible] (2007 [illegible] 2010 [illegible]).

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2012 2010

الفصل الثاني

الأدب النظري والدراسات السابقة

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Charlene,Weber& Alexa. [illegible] (Bean) [illegible]

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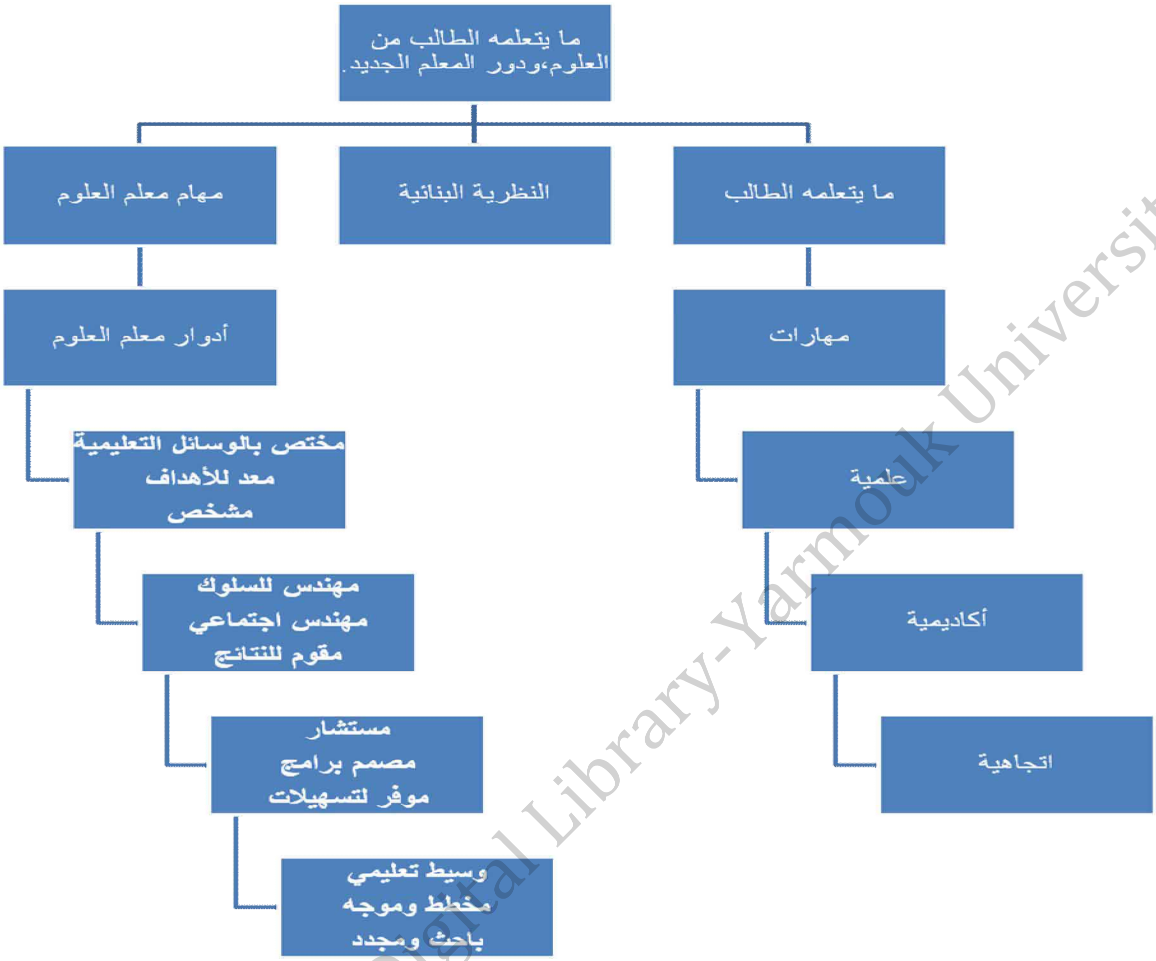
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Science Education Enhancement & Development (SEED)

(JICA)


ما يتعلمه الطالب من العلوم،ودور المعلم الجديد.
مهام معلم العلوم
النظرية البنائية
ما يتعلمه الطالب
أدوار معلم العلوم
مهارات
مختص بالوسائل التعليمية
معد للأهداف
مشخص
علمية
مهندس للسلوك
مهندس اجتماعي
مقوم للنتائج
أكاديمية
مستشار
مصمم برامج
موفر لتسهيلات
اتجاهية
وسيط تعليمي
مخطط وموجه
باحث ومجدد

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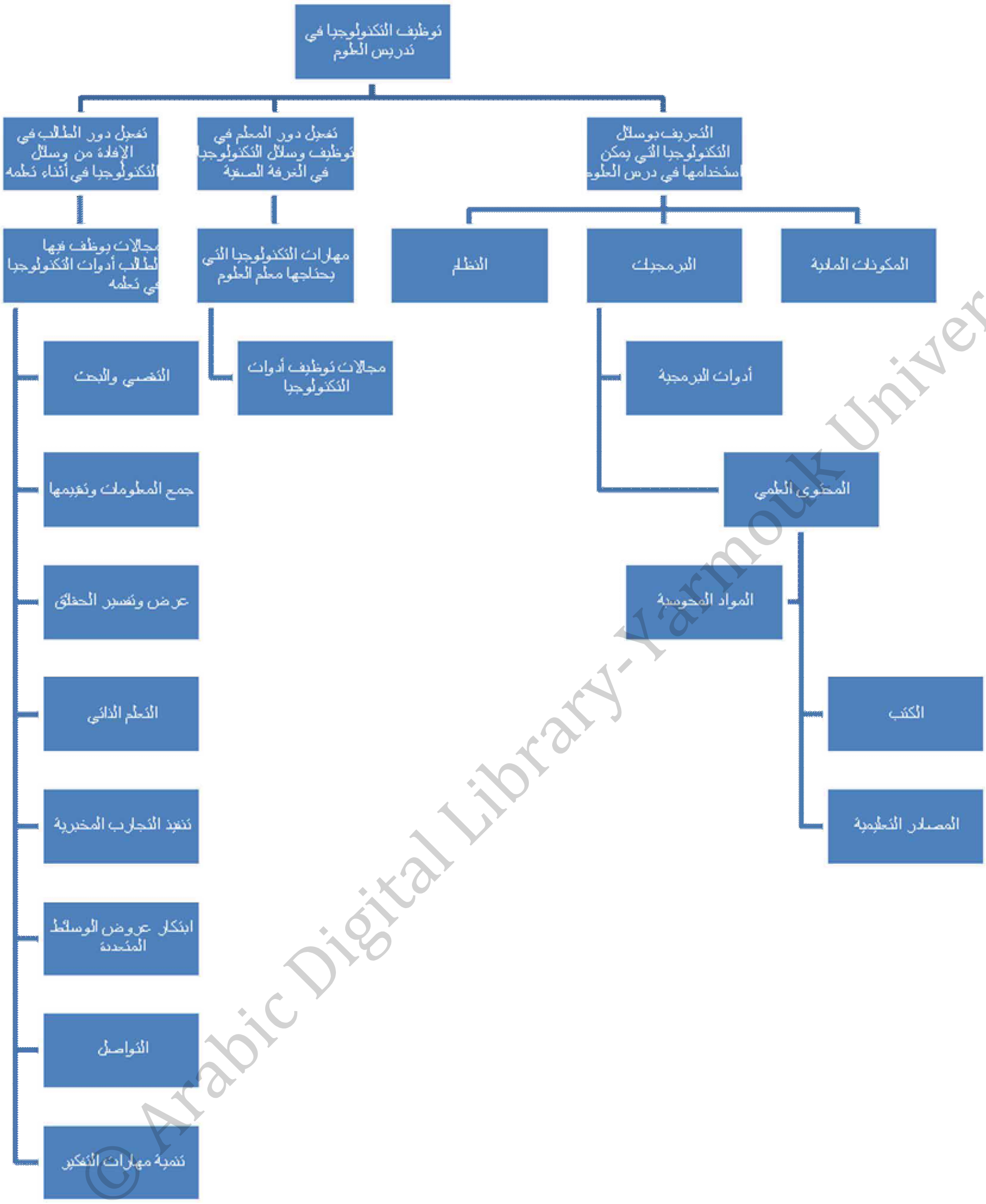
ƒ ǁƑƲǁɛ üǋϴ Ʀ l ƥǊƗǊǁɛ !ǂyƗǁɛ ɭ ƑĭǗǐƗɛƥƗ ƨɛ

(2009ÜŎ!Ǵɳǆ!ƒĂ ŎǊƵƨ!ƒĂ ƘƒƥƒƧɳ)

ÜƗù ŏǆǆzƙ!ƒĂ ƗùŏǆŏǆzƙǃƑ ƗŏǆǆzƑ Ŏ5 ǋƙŏǊǴɳŏƒ ɭƥǴŏƨĂ Ɣ!ǴƱ!ƒ ƧĂƥ ýŏzƨƙ (2) ý‡T!ƒ ƠưĂŏ

ƘǴùǌŏɳĂƙ!ƒ ǇĂǆƥlŏ ÜǆǆzƙǃƑ ƗŏǆǆzƑ ǇŏƥTƧǆĂ ǇŏƧʅŏǆ‡ ƘǴŏɳŏƙƒƧƙʅǓƒ ǉƦǌ! Ǵl5Ă ǆǆzǆ!ƒ ƻƧƮƙŏĂ

.ƥǴƙzǆ!ƒ ǇŏlǆƙǃƑ ǇƵ ǴưĂƵ ƗzɳƒƧ!ƒ ƗŏƦʒƙǃƒĂ ƘƒƥǴTƧǓƒĂ



(3) ül ʅ׀ꜫ

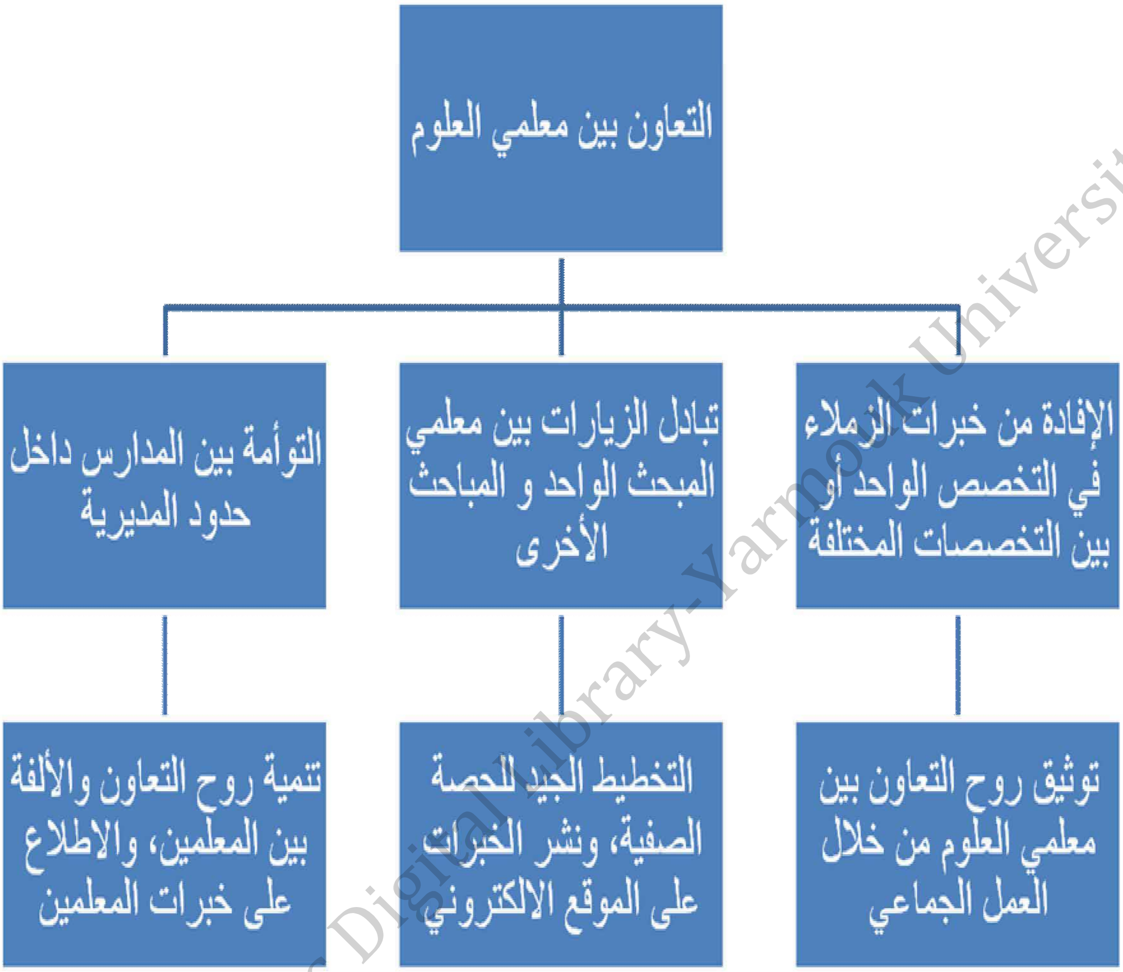
!Njǂyꜫ ƻ ĭƥǭǂ Ĭȝ ƑĭШNjǁNjǆ׀ǂꜫ Ƹ ĭưNjǂ

(2009ÜǑ!ƓηǆĭǂfĂ ǑƕƵȥ!fĂ Ƙfƥfƻƞ)

Σ ŏƻƥùƙ Ǒù5 ǂŏǉ׀ƙ!f ýŏzƽƙĂ ǂŏǆŏǉzƙ!f ǂŏǉǆzǉ! ƓŏηĂ!Ăǉǂƙ!f ǂŏǆNjĐ ăƥǆ (3) ýǂT!f ƠưĂŏ

ǑùǉĂƻƙǂ!Ǘf ƥùŏƻƕ!fĂ ƘùǉƻƙǉǗf ƻĂƥ ýŏzƽƙ ýǔP ǇǆŏýƓȚƙǗfĂ ǉǉzƙǉ! ǉƥŏƥη f ƻ5 Ơƙƽ! ǉĂǉz!f

.ǂƵĂǉƙǆ!f ǂŏǆŏǉzƙ!f ƘƓŏηǆƻƕ!fĂ YĂǆʅǆ!fĂ ǑƑƻǆ!f ƔƠƓPƙ!f ýƑƓʅĂĂ



(**4**) ü|ʅ‖ع

!ǸǂyǁΣ ǏDžǂyDž DžǐǴ DžǸǅyǂǁΣ

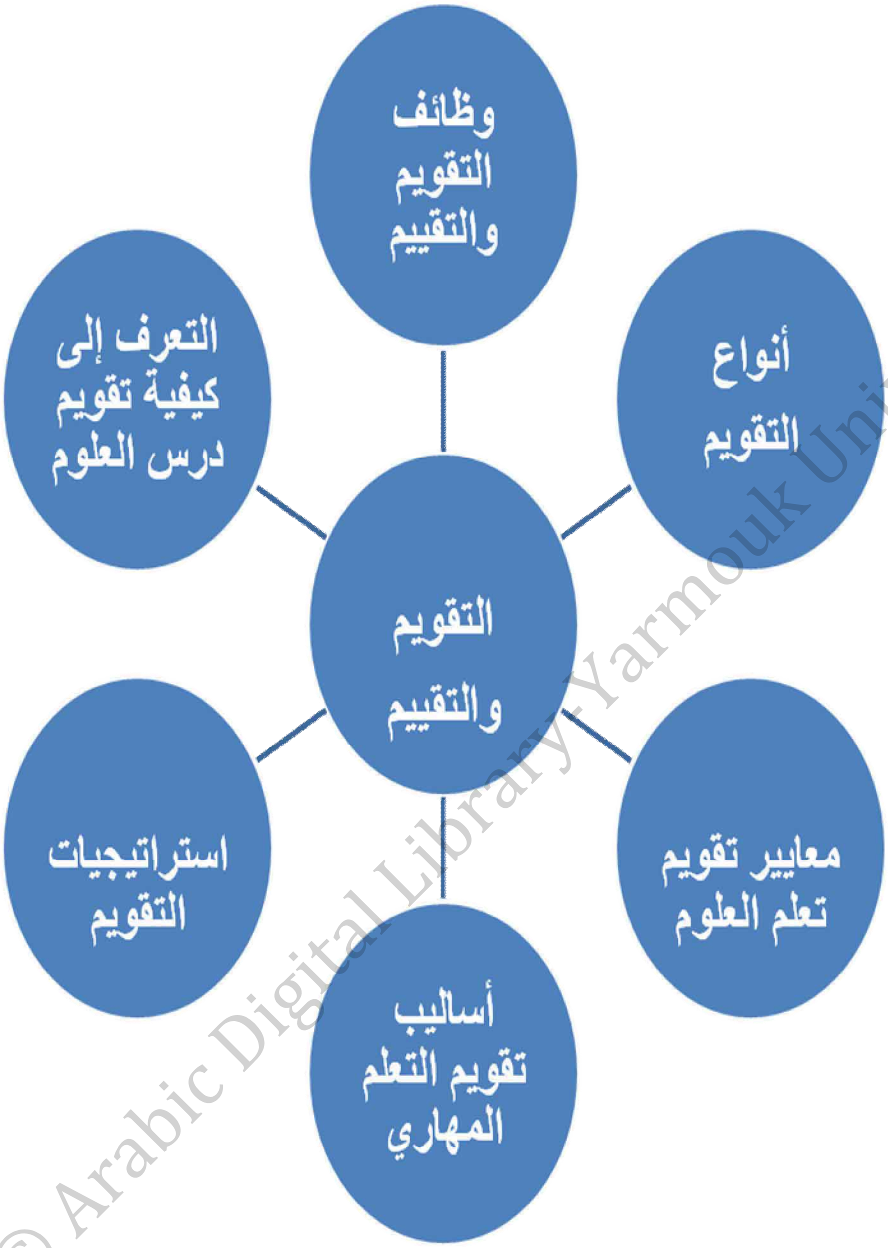
.(2009ÜǑ!Ǵηdž!ƒĂ ǑǈƵƨ!ƒĂ Ƙƒƥƒƨη)

Ǳǁƍ!ƒĂ DžǁzdžǃLJdž ýǂ ƘǴǒǴ5ǂ ƨǒĂƱƙ Ǐ!ƒ ĭĂǈƨƙ!ƒ DžǴǕǀ!ƒ ƜǴǒƙơƒ ăƥdž (4) ýǂT!ƒ ƠưĂǒ

ǴùǀĂǂǒ! Ǵùdžǌǀdž ýǂ! ǂǈʅǴǀdž!ƒ ǂǒdžǒǁzƙ!ƒ ǂǑǒǈ!ƒ ƥǴηǒDĂ ÜDžǒǁzƙ!ƒĂ ǂǒǈƨƙ!ƒ ƖƨƒƨĂ ƻƒƥǸǀ ydž Džηʅǀǒ ǴdžǈU

ƔǴʅùƙǂƒ ƔǒǃǴùʅDĂ ýƒǴùʅĂ Ǒù5 ƳƨǴʅùƙdž!ƒ ĂdžǀƘ!ƒ ǴǌƱƨ5 Ǒƙ!ƒ ƘǴǒƥơƙ!ƒ ǂǌηƒĂdž ǏǁƵ LJǒƨƥǴƥ

.Džǁzƙ!ƒ Ǒ5 ǴǒηĂ!ĂǀǂƙǑ!ƒ ƨǒƱĂƙ ĂƠǀ Džƨƶǈ Džƥǀƙ!ƒĂ ÜƘƒƨǴǌdž!ƒĂ ƘǴdžĂǁzdž!ƒ



(5) ül ʅ‖ɛ

!ĩĩʂɫ‖ɛǌ !ĩǋʝʂɫ‖ɛ

(2009ÜǑ!Ǵɳdž!ƒĂ ǑƕƵɐ!ƒĂ Ƙƒƥƒƨɳ)

ǅǖƶƙù!ƒ ǑƙǒǖǆƵ ǇǴǂƨƒ ǇǆǓ Ǵǒʅǒƒƨ Ǵǰǂƨ ǋǈʝƕ ǋǆǒĂǀƙĂ ɫƕǖƱ!ƒ Ǵƒƥ ΣǴǒp (5) ý‡T!ƒ Ơư Ăǒ

ǅǴùƶ!ƒ ɫùǒǴǌǰ Ǒù5 ɣù!ǴƱǖ! ɫǒƥǒǖǀƙ!ƒ ǴǌǰƙƨĂ Ʈƕ ǅǖƥǀƙ Ǒƙ!ƒ ƘǴǰǴơƙǆŬƒ ǑǰƶǑ ǅǒĂǀƙ!ƒ ǇǴ‡5 ÜǅǒǖǆƵƙ!ƒĂ

ǇǅƥùǒƨǰǑùƙ!ƒ ƘƒƨǴǌǆǆ!ƒ ɫǒǆǖƶ!ƒ ɫ5ƨƶǆ!ƒ ΣǴǒ! ǏƶʅǑ ǐƦ!ƒ Ǎǌ ýǒƮŰƒ ǅǒĂǀƙ!ƒ Ǉ‡!Ă ÜǑʅƒƨƥ!ƒ

.ǀǴ5‡ƕ ǅƥƤƙʅƙ

[illegible]

[illegible]
[illegible]
[illegible]
[illegible]
[illegible] .(2005 [illegible]) ([illegible])

[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] .(2011 [illegible])

[illegible]

[illegible]
(Simon,2003) [illegible] (2007 [illegible] 2002 [illegible]) [illegible]
[illegible] (2010) [illegible]
[illegible]

12. [illegible]

13. [illegible]

14. [illegible]

[illegible] (Ginston,2010) [illegible]

1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]
6. [illegible]
7. [illegible]
8. [illegible]
9. [illegible]

.ŧŏƑĠǉƅ!ƒ ĬǁƵ ŧďǰƑĠl!ƒ ĎŏĂlƙ!ƒ ƘƒĂƥɷ ĬǁƵ ƥŏǂďƙ!ƒ .10

.ŧƼƧƶď!ƒ ĬǁƵ ýĂƮơǁ! lƥƥƶƙď!ƒ ƧƥĠƮď!ƒ Ĭ!ƍ lƧĠTŰƒ .11

: ƅĭǝƑďĠǁɛ ƥǋƴǁĎ ĎĎ !ǂyĎǁɛ ƥǋƍ

ǋùpĠƼƧĂ ĭƥùƞǉ!ƒĂ (2011) ŧùƅŏĠƱƤ Ġǌŏ!ƍ ƧĠTɷ Ġďǂ Ġǌƅ ĎĂlŏ Ŏƙ!ƒ Ďǁƶď!ƒ ƧƒĂƥɷ ýƛďƙƙ

-: Ŏǁŏ Ġďŏƽ ŧŏƑĠǉƅ!ƒ ŧŏƧƱǉ!ƒ Ġǌƙƥƥơ Ŏƙ!ƒĂ (2005)

.1 Ďǁƶď!ƒ :Ďƥlď ĭɷ ĎƥlŏĎ ŧƵĂďƞď ǈď ŧƱTǉŰƒ ýƑƥƅ!ƒĂ ŧƅǁƱǁ! ƜpĠùǉ Ʃŏ!Ă ŧùƼƧƶďǁ! yƞTùŏĂ

.lƧTĠƅď!ƒ ƘƒƧƅƤ!ƒ

.2 Ďǁƶď!ƒ Ʊơǚď) ƔpƒƧď(: ĭɷ ýďƶŏ ŧlŏƧƱƅ ƧŏƺĂ ŧŏďƪƧ ŧŏďƪƧ Ŏǁơ! ƠưĂŏ! ƧĠǂƼɷ ŧùƅǁƱ!ƒ Ďùƛ

.Ďǁƶƙ!ƒ ƘƒƧĠŏƤƅ ƥŏĂƨƙ!ƒĂ ýƵĠƽƙ!ƒ

.3 Ďǁƶď!ƒ ǋƞĂď ƪǁƑŰ ŧǁƑƪǁ ƟƧĠƱĂ ŧǁǂTďǁ! :Ƙǚǂ Ƨŏƛŏ ƧĠǂƽŰƒ ŎǉƅŏĂ Ďŏǋĭƽď!ƒ ǈď ýǚƤ ŧǁƑƪŰƒ ƯƧƵĂ

. ŧǁǂTď!ƒ

.4 Ďǁƶď!ƒ ĎƱǉď (ƱƪĂ!ƒ): ĭɷ ĎƱǉŏ Ġď ǋǁƶƽŏ ŧƅǁƱ!ƒ ŧŏĠǉƶƅ ŧƥƥĂ ŧŏƧơĂ ŧŏƽĠǂ ŧǚƪƙǂTĠƧ .

.5 Ďǁƶď!ƒ ƥƵĠƪď ĭɷ :Ġǌ! ƨƪǉďĂ ŧďĠƵ ƘĠpǚƵ ŧĂƥơ ĬǁƵ ýƞTŏ ĭɷ :Ġǌ! ƨƪǉďĂ ǈĂĠƶƙ!ƒ ĂďǉĂ ƶpǚ!ƒ ƘĠùpǚƶ!ƒ

.ŧŏǉĠƪǉŰƒ

.6 Ďǁƶď!ƒ ƧƞŏƧ Ďǁƶƙǁ! (ƨƛĂď): ĭƒ ĂƦ lƧƅƤ ĠǌŏƱƶŏ ǈď! ƥŏƧŏ lƥĠƽƙƪŰƒ ĠǌǉďĂ ƨùƛĂŏĂ ƘĠùƶpĂƙ!ƒ

.ƘƒƧĠǌď!ƒ Ă ŧƼƧƶď!ƒ Ďǁƶƙď!ƒ ĬǁƵ ĠǋƧƛɷ Ʃŏlŏ ŧ!ĂƋƪď!ƒ

.7 Ďǁƶď!ƒ ǈĠƅ ƘĠŏƧƱǉǁ! :ƒĭ ŏƪĠƵƥ ŧƅǁƱ!ƒ ĬǁƵ ýďƶ ƧĂƒƅƱ ǈŏƅ ƽǂùĠƧǋĎ ĂƅǉùĠƇ ǉďùĠƦɯ ƦƒƘ

.ĠǌƑĠǉƅƅ Ɣ!ĠƱ!ƒ ĎĠp Ŏƙ!ƒ ŧƼƧƶď!ƒ ýƛďƙ Ĭǉƶď

[illegible] (2011) [illegible]:

.1 [illegible] :The Active Learner [illegible] ([illegible]

[illegible]

.2 [illegible] :The Social Learner [illegible]

[illegible]

.3 [illegible] :The Creative Learner [illegible]

[illegible]:

[illegible]

[illegible]

[illegible] (German & Burke ,1996) [illegible]

[illegible]

[illegible] Basic Science Processes [illegible]

[illegible] Integrated Science Processes([illegible] Gega, 1994; Martin,

.(Sexton &Gerlouich, 2001; [illegible] (1996) [illegible] (1998) [illegible]

[illegible] (2002) [illegible] (1992) [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] 2000 [illegible] (2005 [illegible]:

[illegible] :(Observing) [illegible]

[illegible] :(Measuring) [illegible]

[illegible] :(Classifying) [illegible]

[illegible] :(Reasoning) [illegible]

[illegible] :(Predicting) [illegible]

[illegible] :(Using of numbers) [illegible]

[illegible] : (Using Space/Tim Relationships)[illegible]

[illegible]

[illegible] .

[illegible] :(Communicating) [illegible]

[illegible]

.[illegible]

[illegible] :(Hypothesizing) [illegible]

.[illegible]

[illegible] :(Data Interpreting) [illegible]

.[illegible]

[illegible] :(Defining Operationally) [illegible]

.[illegible]

[illegible] :(Controlling Variables) [illegible]

[illegible]

.[illegible]

[illegible] :(Experimenting) [illegible]

[illegible]

.[illegible]

[illegible]

[illegible]

:(2011 [illegible]) [illegible]

[illegible]

[illegible] (Pendarvis, 1986) [illegible]

[illegible] (344) [illegible] (40) [illegible] (202) [illegible]

[illegible] (Bagheri & Kretschmer & Sia,1991) [illegible]

[illegible]

[illegible] (Bagheri & Others,1992) [illegible] (9) [illegible]

[illegible] (Schramm,1997) [illegible] (41) [illegible] (22) [illegible] (19) [illegible]

[illegible] (Schuen, 1997) .[illegible]

[illegible]

[illegible] ([illegible]) [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

.[illegible]

[illegible] (Ross & Hogaboam,1998) [illegible]

[illegible]

[illegible]

[illegible]

.[illegible]

[illegible] (Saud,1998) [illegible]

[illegible] ([illegible]) [illegible]

[illegible]) [illegible]

[illegible]

[illegible]

[illegible] (10)[illegible] (5) [illegible]

[illegible] 1997/1996 [illegible]

[illegible]

[illegible] (Porter, 1999) [illegible] (12) [illegible]

[illegible] (Indiana, 2000) [illegible] (SEC) [illegible]

[illegible] (Jailani,2000) [illegible]

[illegible]

[illegible] (Morris and Donald, 2000) [illegible]

[illegible] (Turpin, 2000) [illegible] (7) [illegible] (7) [illegible]

[illegible] (Hocutt, 2003) [illegible]

[illegible]

[illegible] (House, 2006) [illegible]

[illegible] (TIMSS) [illegible]

[illegible]

[illegible] (Smith, 2006) [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] (Mckenna, 2007) [illegible]

[illegible]

(4) [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] (Jang,2009) [illegible]

[illegible]

[illegible] (31) [illegible]

[illegible]

[illegible]

[illegible]

[illegible] (Gill, 2010) [illegible]

[illegible]

ƧŏŏǴùƶdž ǈǰdž Ƙŏʅƒƨƥ!ƒ ƘǁơƧdž!ƒ Ɣʅǁǰö ǁdžǍ ǉĂǀ!ƒ ƱǁǀǏ ǈǰƵ ƻƬƚǁ! ÝƘŏŬĂ!ƒ ƧŏŏǴƶdž ýŏǁơǩ Ƙʅƒƨƥ!ƒ

ƥùŏƚƌǩ!ƒĂ ÜǴùnjŏǁƵ ǈǰŏdžǁƶdž!ƒ ƔŏƨƥǩĂ Ƙǁʊ!ƒ Ɣʅǁǰǩ Ŏǩ!ƒ Ƙ!Ǵƶƺ!ƒ ƘǴŏƞŏǩƒƨǩʅŬƒĂ ÜƔǩƚ!Ǵ Ǵnjǰŏdž ư ǩ!

ƥǁǰǩùʅŬǴ ÜƘǴŏù ưǴŏƨ!ƒĂ ǎĂǁƶǁ! ƥƵǴʅdž ǋdžǴǰƨ ǎŏƥǀǩ! ƘƞǴơ!ƒ ăƥdžĂ ƩŏƨƥǩƓ Ǵǰǁǰ Ǵnjǀŏʊǩ ƮǁƵ

ýùƞ ǈǰdž ƧŏŏǴƶdž ƾŏǀơǩ!Ü2061 YĂƧƬdžĂ (NRCÜ2004) ŎdžĂǀ!ƒ Ƙơ!ƒ Ʃǁƞdž ǈǰdž Ǵƒƨʅǁ Ʈ!ƒ

ƧƬƋdž ƒƦǋĂ %70 ƾĂ5 ýdžǴƚǩdž!ƒ ǎŏǁƶǩ!ƒ ƧŏŏǴƶdž! ƘǴǁ!ƒ Ƙʅǰ ǈǰ ǋƑǴǩǰ!ƒ ƘƧnjƲ ÜýdžǴƚǩdž!ƒ ǎŏǁƶǩ!ƒ

.ƘŏdžǁƶƓ!ƒ ƘǴʅƧǴdždž!ƒ Ŏ5 Ƙʊ!ƒ YƒƥʊƒĂ ǈǰŏdžǁƶdž!ƒ Ǵƒƥǁ ƧĂƱǩ ƘŏdžǋŬĂ ÜŎǁdžǴƚǩ!ƒ ǋdžǴǰƨʅ!ƒ ǉĂǀ!

:ʊƭƏƒdžǴǁ ƥǋjưdžǁ ǎǁ njǋƘƟǁ üƭƚƟ ǉǋƒdž Ʈƚǁ ǉƒƨƐƥǁ :ƒƭdžƒǩ

Ʈù!ǫ ƥǁǰǩùʅŬǴĂ (Kesidou and Roseman, 2002) ǈǴùdžƨĂƧĂ Ăƥŏʅù ƚ ăƧƞ

Ü(AAAS, 1990) ǎĂùǁƶ!ƒ ǎƥùǀǩ! ƘŏƚŏƧdžŬƒ ƘŏdžĂǀ!ƒ Ƙʅʅƌdž!ƒ ǋǩǀǁƱ ƭƦ!ƒ 2061 ǎǴƵ YĂƧƬdž

Ýǉƥùŏƥƶ ƘǴʅùʅƋdž! ǋdžƒƨùʊ ǈǰdž ƘŏʅǴʅŬƒ ƘǁơƧdž! ǎĂǁƶ!ƒ ǉƥǴdž ýdžƬǩ Ɣǩƚ (9)ý Ƙŏǁŏǁơǩ Ƙʅƒƨƥ

ÜƘùʊǁƱǁ! Ƙǁʊʅdž!ƒ ǎŏǋǴƺdž!ƒ Ü ƻƒƥǋŬǴ ǋǩƥǔƵĂ ǎŏǁƶǩ!ƒ :ýǔƤ ǈǰdž Ɣǩƚ!ƒ ƥƶǩ Ŏǩ!ƒ ǋdžƒƨʊ!ƒ ƒ ơƺ!

ƱʊǩƧùŏ Ǵùdžʊ ýŏǁơǩ!Ǵ ƩŏƨƥǩƓ ƾƒƒƨƱĂ ăĂǩơdž!ƒ ýĂǴǁǩ ǎǩ ǴǋƥƶʊĂ .ƱƬǰ!ƒ ǴǴǁʊƓ ÜƘŏdžǁƶ!ƒ ƨǴƚ5Ŭƒ

ǴǋƨǴǀǩ5Ŭ Ɣǩƚ!ƒ Ŏ5 ƘŏƒǴǁʊ!ƒ Əƥǁʊdž!ƒ ƮǁƵ ƨŏƚƨǩ!ƒ ǉƨĂƨư Ʈ!ǫ ǋƑǴǩǰ!ƒ ƘǁƬĂǩ5 ÜƘŏƒǴǁʊ!ƒ ƘŏƨƲǰ!Ǵ

.ŎƒǴǁʊ!ƒ Ʈơǰdžǁ! ƥǰǩʅdž!ƒ ǎǁƶǩ!ƒĂ ǈǰŏdžǁƶdž!ƒĂ Ƙǁʊ!ƒ ǎƥƤǩ ǴǋƨĂƥʊ Ŏǩ!ƒĂ Əƥǁʊdž!ƒ ǰǋǋ!

ǉƥǴùdž!ƒ YĂù ưĂdž ýùŏǁơǩʊ (Stern and Roseman, 2004) ǈǴùdžƨĂƧĂ ǈƨŏǩʅ ǎǴƿĂ

Ʈ!ǫ ǉƥǰǩʅdž!ƒ ǉƥǴdž!ƒ ýŏǁơǩ ƧŏŏǴƶdž ƮǁƵ ƥǴdžǩƵŬǴ ÜƘƱʅĂǩdž!ƒ ƘǁơƧdžǁ! Ɣǩƚ (9)ý ƘƿǴƱ!ƒ ƘŬĂơǩĂ

ǎĂùǁƶ!ƒ ƩŏƨƥùǩƓ ƘŏƚŏƧdžŬƒ ƧŏŏǴƶdž!ƒĂ Ü(AAAS,1993)ǎĂǁƶ!ƒ ǎƥǀǩ! ƘŏƚŏƧdžŬƒ ƘŏdžĂǀ!ƒ Ƙʅʅƌdž!ƒ

ÜƘƿǔƶ!ƒ ƘƒƦ ƧǋƒĂƲ!ƒ ÜƘʊǁƱ!ƒ ƨǴƚ5ƲÜƘŏdžǁƶ!ƒ ƨǴƚ5Ŭƒ) :ǴnjdžǋƲĂ ǉƥǴdž!ƒ ýŏǁơǩ ǎǩĂ (NRC,1996)

Ơŏù ưĂǩ! Ƙŏʅùŏƒƨ ƧǴùƚ5Ʋ ƥĂƞĂ ǎƥƵ Ʈ!ǫ ǋƑǴǩǰ!ƒ Ƙǁʈ Ăǩ .(ƧŏĂƱǩ!ƒĂ Ǵƒƥǔƒ ǎŏŏǀǩ ÜƘʊǁƱ!ƒ Ƨŏƚƺǩ

.ƘʊǁƱǁ! ƱƬǰ!ƒ ǎǁƶǩ!ƒ ƮǁƵ ýƞƬŏ ƔĂǁʅǋ ÜǉƥƧƞdž!ƒ ƨǴƚ5Ŭƒ

[illegible] (Duban, 2008) [illegible]

[illegible]

[illegible] (Jenkins, 2000) [illegible]

[illegible]

[illegible] (Hassard & Dios, 2000) [illegible]

[illegible] %33 [illegible]

[illegible]

[illegible] (Howard & Enger, 2000) [illegible]

[illegible]

[illegible] (2002) [illegible]

[illegible]

[illegible] (Brewer & Daane, 2002) [illegible]

[illegible]

(Neo and Neo, 2002)

(2002)

(2002)

ǇǑǆǎ ư ùƙƌ Ɨù ƪ ƒƨƥ!ƒ ƘùƮ ǍƊǍ Ü Ɨǒǁ!ƒ ƘƒƨǄƙƤǕƒ ƗǆǙƵ Ǉǆǎ %50 ǇǆǎýƥƒƗǆǙƵƌƒƥƞ Ɨǒǉƥƙǆǎ

. ƗǒƼƮ!ƒ ƗƼƨƺ!ƒ ýƤƒƥ ǆǌǅƒƥƈ ƨǒǍƱƙ Ǐ ǁƵ ǄǋƨƛǛ ƗǒǅǄǉƌ!ƒ ƗǒƨƓǉ!ƒ ǆǍǁƵ!ƒ ǇǑǆǁǆǎ ƥƒƥƵƹ ǊǆǎƒƨƌƎ

Ǒù5 ǑǅǄùǉƌ!ƒ ǆǁƵƙ!ƒ ƜƦǍǆǉ ƗǒǁƵǄ5 ǇƵ ƧƨƵƙǁ! ƘƼƥǋ Ɨƪƒƨƥ (2003) ƚƥ!ƒǍƤ!ƒ ǎƨƞƊǍ

ƥƒƥùƵƹ ǆƙ ƳǄǋǍơǉ ƗƌǁƱ!ƒ ƘǄǋǄƞƙƒǍ ƇǄǒơǛƒ ƚƥǄǆ Ǒ5 Ǒǆǁǁƶ!ƒ ǐǍǉǄƛ!ƒ ýǍǛƒ ƧƮ!ƒ ƗƌǁƱ ýǒƮơƙ

ƗƚǒƨƱ ǕǆǁƵƙ!ƒ ƚƨǍƥ) ǇǑǆǒƪǒƨƥƙ ǇǑǆƙƚǒƨƱ ƨƛƒ ƇǄƮƚƙƪǕ ǑǅǄǉƌ!ƒ ǏơǉǆƵ!ƒ Ǐ ǁƵ ƗǆǅǄƥ ƗǑǆǒǁƵƙ ƚƥơǍ

ƘƇǄƞǍ .ƗǒƥǄǒƙƵǗƒ ƗƚǒƨƱ!Ǆƌ ƗǉƨǄƚǆ ǕƇǄǒơǛƒ ƚƥǄǆ Ǒ5 Ɨǒǆǁǁƶ!ƒ ǆǒǋǄƽǆ!ƒ ƗƌǁƱ!ƒ ýǒƮơƙ Ǒ5 (ǑǁƙǒǍ

ƗùƚǒƨƱ! ǎƨƶƙ ƗƌǁƱ ƘǄǋǄƞƙƒǍ ýǒƮơƙ Ǒ5 ǄǒǅǄƮơƺ Ɨ!ƒƥ ƾǍƨ5 ƥǍƞǍ Ǐ!ƺ ƨǒƬƙ! Ɨƪƒƨƥ!ƒ ǊǅǄƙǉ

ƗƚǒƨƱƌ ƒǍƪƨƥ ǇǑǆƦ!ƒ ƗƌǁƱ!ƒ Ơ!ǄƮ! (ƗǒƥǄǒƙƵǗƒ ƗƚǒƨƱ!ƒǍ ǕǑǁƙǒǍ ƗƚǒƨƱǍ ǕǆǁƵƙ!ƒ ƚƨǍƥ) ƩǒƨƥƙŽƒ

.ǑǁƙǒǍ ƗƚǒƨƱǍ ǕǆǁƵƙ!ƒ ƚƨǍƥ

ƗùǒƨƓǉ!ƒ ƨǄù ǂ5Ǜ ǆǍǁƵ!ƒ Ǒǆǁǁƶǆ ǆƒƥƤƙƪƒ ƗƞƨƥýǍơ Ɨƪƒƨƥ ǎƨƞƊ (2004) ǑǋƨơƒǄǆƊ

ǏǍƦ ǆǍùǁƵ!ƒ Ǒǆǁǁƶǆ ǇǆǎƗƪƒƨƥ!ƒ ƗǉǒƵ ƘǉǍǂƙ5 ǕƗǒƥǍƵƪ!ƒ ƗǒǋƨƵ!ƒ ƗǂǁǆǆǎƑ!ƒ Ǒ5 ƩǒƨƥƙŽƒ Ǒ5 ƗǒǅǄǉƌ!ƒ

ƨǄùǂ5Ǜ ǆǍùǁƵ!ƒ Ǒùǆǁǁƶǆ ǆƒƥƤƙƪƒ ƗƞƨƥǏ ǁƵ ƧƨƵƙ!ƒ Ƨƥǋǉƌǂ ƗƵǍǉǆǎ!ƒ ƘǄƮ ƮƤƙ!ƒǍ ƘƒƨǋƤ!ƒ

ýùǒǋǆƙ!ƒǍ ǕƩ ǍǒƨǍ!ǄùǂƌƑ!ƒ Ǒ5 ƒ ƮƤƙ!ƒ ƧǙƙƤǄƌ ǆƒƥƤƙƪǕƒ ƗƞƨƥƧǁƙƤƙ ýǋ ǕƗǒǅǄǉƌ!ƒ ƗǒƨƓǉ!ƒ

ǇǆǎƗù ƪƒƨƥ!ƒ ƘǁùƮǍƙ ƤƩǍǒƨǍ!ǄùǂƌƑ!ƒ Ǒ5 ƒ ƮƤƙ!ƒǍ ǏǍƌƨƙ!ƒ ýǋǆǆǎ!ƒ ǇǑǒƌ ýƵǄƽƙ!ƒǍ ǕǏǍƌƨƙ!ƒ

ƥùƞǍǒ ǕǍ ǕƗǒǆǒǁƵƙ!ƒ ƘǄƪƨǆǆǎ!ƒ ýǙƤ ǇǆǎƗǒǅǄǉƌ!ƒ ƗǒƨƓǉ!ƒ ƨǄǂ5ǆ ǇǍ5ƓǍǒ ǆǎ Ǚǒǁƶ ǆǍǁƵ!ƒ Ǒǆǁǁƶǆ

ǄùǆǎǇǒǍ Ǖƒ ƮƤƙ!ƒǍ ǏǍƌƨƙ!ƒ ýǒǋǆƙ!ƒ ǇǑǍƌ ýƵǄƽƙǁ! ǍƊ Ǖƒ ƮƤƙǁ! ǎƨƶƙ ƗǒǅǄƮơƺ Ɨ!Ǖƥ ƘƒƦ ƾǍƨ5

. ǏǍƌƨƙ!ƒ ýǋǆǆǎ!ƒ Ơ!ǄƮ! ƗǒǅǄƮơƺ Ɨ!Ǖƥ ƘƒƦ ƾǍƨ5 ƥƞǍƙ

ƗùǒƨƓǉ!Ǆƌ ǆǍùǁƵ!ƒ Ǒǆǁǁƶǆ ƗƼƨƵǆ ƗƞƨƥǇƵ ƧƨƵƙǁ! (2005) ƯǍƵ Ɨƪƒƨƥ ƘƼƥǋ ƥƥ

ǇǑùǆǎ ƗùƪƒƨƥƗùǉǒƵ ƘǉǍǂ .ƗƌǁƱ!ƒ ýǒƮơƙǍ ǕƇǋǒǁƵ ǆǑƒƊ!ƒ ƩǒƨƥƙǁƗ ǆǋǄƪƨǆǆǎ ƗƞƨƥǍ ǕƗǒǅǄǉƌ!ƒ

ƗùǒƨƓǉ!Ǆƌ ƗùƵƼƙƨǆǆǎ!ƒ ƗùƼƨƵǆǆǎ!ƒ ǍǍƦ ǇǑǒùǆǁǁƶǆǍ ƗǒǅǄǉƌ!ƒ ƗǒƨƓǉ!Ǆƌ Ɨ ư ƼƤǉǆǎ!ƒ ƗƼƨƵǆǆǎ!ƒ ǍǍƦ ǇǑǆǁǁƶǆ

%55

(Ercan, Bulent,and Dement, 2009)

(1997)

(258)

(Corrgan, 1997)

(6-5)

(1998)

(543) (502)

[illegible] (30) [illegible]

[illegible] %50 [illegible] %75 [illegible]

[illegible] (1999) [illegible] (%50) [illegible] (%7) [illegible] (%11) [illegible] (%20) [illegible] (%03 [illegible]

[illegible] (Walter and Soyibo, 2001) [illegible] (133) [illegible] (172) [illegible]

[illegible] (41) [illegible]

[illegible] (35) [illegible]

[illegible]

[illegible] (2002) [illegible]

[illegible] (582) [illegible] (300) [illegible] (282) [illegible]

[illegible] (%60) [illegible]

[illegible] (α = 0.05) [illegible]

[illegible]

[illegible]

[illegible]

[illegible] Mckenna, 2007) [illegible] Hocutt, 2003 Ý Smith, 2006Ý House, 2006Ý Bagheri,1991Ý Bagheri,1992 (Hassard and [illegible] (Pendarvis, 1986 ÝSmith, 2006Ý Turpin, 2000Ý [illegible] Dios, 2000) [illegible] (Hocutt, 2003) [illegible] (House, 2006) [illegible] (Gill, 2010) [illegible]

[illegible]

ƴŏƨǴTǆĂ ǈǆƒƨǶ ƚŏǁƵǴ5 ǇǆǄ ƽlơƙ!ƒ ăƥǆ Ƙ!ĂǴǇƙ Ŏƙ!ƒ ƚŏǁơǆ!ƒ ƘǴƪƒƨƥ!ƒ ǇǄ Ʊơǚǆ!ƒ ǇǆĂ .ƚŏǇǴƛ!ƒ

ƚƪƒƨƥ!ƒ ǉƦǋ Ŏƙǆƙ ƒƦ! ǺƚƛơǴǶ!ƒ ǄǁƵ ƥĂƥơ Ŏ5 ƚǁŏǁƿ ƚŏǇƥƨǕƒ ƚǂǁǆǆ!ƒ Ŏ5 ǴǌǆŏĂlƙĂ ǄĂǁƶ!ƒ ǄǁƶǆǄ ƥƒƥƵǫ

ǇŏƪùơƙYĂƨTùǆ! ĭƨƱǇ!ƒ ƨǴƱǗƒ ăĂƙơǆ ýŏǁơƙ lƒƥǄ ƨŏĂƱƙǶ ƚlǶǴƪ!ƒ ƘǴƪƒƨƥ!ƒ ǇƵ ƨŏǆƙƙ Ŏƙ!ƒ

ƚùŏǁƵǴ5 ƩǴùŏl! ǇŏƙǇǴǶƙùƪƒĂ ǕYĂƨTùǆǁ! ƚŏǶŏƨƥƙ!ƒ ƫ ƨĂ!ƒĂ ǕǇƥƨǛƒ Ŏ5 ƚŏǆǁƶ!ƒ ƚŏǶƨƙ!ƒ ƨŏĂƱƙĂ

ǴùǆǕƔ!ǴƱ!ƒ ýĂơ ƨƚƨǆƙǆ!ƒ ǄǁƶƙǄ!ƒ ǕŎ5ƨƶǆ!ƒ ƥǴƬƙƿǗƒ) :YĂƨTǆ!ƒ ƻƒƥǋǄ ǴĂư Ŏ5Ă ǕYĂƨTǆ!ƒ

Ŏù5 ǴŏƞĂ!ĂǇƚƙ!ƒ ƻŏƱĂƙ ǕǄĂǁƶ!ƒ ƩŏƨƥƙŎ5 ƔŏƨƞƙĂ ƚƱơǚǆ!ƒ ƨĂƥ ǕǄĂǁƶ!ƒ Ŏ5 Ɣ!ǴƱ!ƒ ƚǆǁƶƙŏ

ǕŎƑǴùǇǶ!ƒ ǄǁƶƙùƩ ǕǄŏĂlƙ!ƒĂ ǄŏŏlƙƩ Ǖƥŏƞ!ƒ ǄĂǁƶ!ƒ ƩƨƥǕǄĂǁƶ!ƒ ŎǆǁƶǆǄ ǇŏǶ ǇĂǴƶƙ!ƒ ǕǄĂǁƶ!ƒ Ʃŏƨƥƙ

ǇŏƪùơƙYĂƨTùǆǶ ƒĂùlơƙ!ƒ ǇŏƦ!ƒ ǇŏǆǁƶǆǄ!ƒ ǴƒƥǄ ýǚƤ ǇǆǄ ǋƙŏ!ǴƶƼ ǇǆǄ ƽlơƙ!ƒĂ .(ǄǁƵ!ƒ ƘǴŏǁǆƵ

.ǇƥƨǛƒ Ŏ5 ƚŏǆǁƵ!ƒ ƚŏǶƨƙ!ƒ ƨŏĂƱƙĂ

ýǴùƞǆ Ŏ5 ƒ ǴƬƙƤǗƒ ĭĂƦĂ ǇŏƼƨTǆ!ƒĂ YĂƨTǆ!ǴǶ ǇŏlơƙǁǆƩ ǇŏǶƨƥǆ!ƒ ǇǄ ŎƶŏǶƱ!ƒ ǇǆĂ

.ƚùƪƒƨƥ!ƒ ƚǇŏƵ ƘǴƞ ǴǇǋ ǇǆĂ ǕYĂƨTǆ!ƒ ƒƦǋ ǄŏĂlƙ ĬǁƵ ƩǴǇ!ƒ ƨƥǄ ǄǋǄĂǁƶ!ƒ ƩŏƨƥƙƔŏ!Ǵƪ

ƚùǆƑǴl!ƒ Ƙǚƚƚǆ!ƒ ýơ ĬǁƵ ƥƵǴƪŏ ǴǆǆǕƚǇŏƶ!ƒ ǉƦǋ ǄŏĂlƙĬǁƵ ƻƨƶƙ!ƒ ĭƨĂƨư!ƒ ǇǆǄ ơǶƬǄ ƒƦ!

ƔŏƨI!ƒ ýǶlƙƪǆ!ƒ Ŏ5 ơƞǴǇ ǄǁƶǆǄ ƥƒƥƵǫ ĬǁƵ ƥƵǴƪƙ ƘǴŏƬĂƙǶ ƜĂƨƤ!ƒĂ YĂƨTǆ!ƒ ǉƦǋ ǋƞƒĂƙ Ŏƙ!ƒ

.Ÿƒ ǴǴT Ǉǫ

الفصل الثالث

الطريقة والإجراءات

[illegible]

[illegible]:

[illegible]:

[illegible] (SEED) [illegible] (JICA) [illegible]

[illegible] (SEED) [illegible] 2012/2010 [illegible]

[illegible] (450) [illegible]

[illegible]

[illegible]

[illegible] (JICA) [illegible] (SEED) [illegible] (8) [illegible]

[illegible]

[illegible] (SEED) [illegible] (8) [illegible]

[illegible] (120) [illegible] (70) [illegible] SEED [illegible] (50) [illegible]

[illegible] (45) [illegible]

ǈǰǩǈǠǨùȖǕƒ Ǐù Ǝ ƗǮǩǨǻ ƘǤȠƧƥ Ǐ Ǝ ƒĂ ȚơǈǰƦ!ƒ ǈǰǶ ǈǻ ǻǋƧǤǰǩƤƒ ǻǩ ƥƿĂ ÜƗǒȚ!ƒ

Ǒù5 ƘƦùǈ Ǒǩ!ƒ ǻ Ʃ!ƒ ƘǤǰǻƷĂ ǑƑǤǈ!ƒ ǻ ƩǨ!ƒ ƏƥǤǻ! ǈǰǻ ƩǻƷ!ƒ ǁǖǻƒ ƧǒƥǀǨ! ǈǰǩƥƩǻ!ƒ

.(SEED) YĂƧTǻ

:ǈ Ƨ ƐƥǀƐ ǀ ƐǋǀƇ

:ǑǨǓƒ Ăơǈ!ƒ Ǐ Ǝ ƘƒĂƥ Σ ǻƤ ǻƒƥƤǨȖƒ ǻǩ ÝƗȖƒƧƥ!ƒ Ư ƒƧƸ ƾǒǀơǨ!

!ǂƴƗǿǁ ƍǀƑǿǤǻ !ǋǀǘƗǻƸ ǈƜƥǀǁ (**SEED**) ƱǋƥȖǻǤ ǻǏƾƟƗǂǻǁ !ǋǂƴǁ ǏǻǂƴǻƸ ƥǏǀƾƗ ƳƐǀƇ .ǗǋƇ

: Ǐ ƏƑǻǤǁ

بناء الأداة:

ƘƦùǈ Ǒǩ!ƒ ǑƑǤǈ!ƒ ǻ ƩǨ!ƒ ƏƥǤǻ! ǈǰǻ ƩǻƷ!ƒ ǁǖǻƒ ƧǒƥǀǨ ǀƒƥ ƧǒĂƱǨ Ǒ5 ƗĂơǤ!ƒ ƘƥǈǨȖƒ

ƗùǒǈƥƧǕƒ Ɨù ǂ ǻǻ!Ǥ ƗǒùȖǤȖǕƒ Ɨù ơƧǻ!ƒ Ǒ5 ǻĂ Ʃ!ƒ Σ ǒƧƥǨ ƻ ƒƥǋ Ǐ!ƍ (SEED) YĂƧTǻ Ǒ5

ǻ ƩǨ!ƒ ƏƥǤǻ Ɣȗơ Ɣ!ǤƱ!ƒ ýĂơ ƨǂƧǻǨǻ!ƒ ǻ ƩǨ!ƒ ƘǓǤȠǻǈ ƘǻǨǋƒ Ǒǩ!ƒ ƗǒǻƩ!ƒ ƔǨǂ!ƒĂ ÜƗǒǻTǤǋ!ƒ

ǤǋƥùƷ Ǒùǩ!ƒ ƗǈǤǨȖǕƒ Ǒ5 Ǥǻǂ ÜǻĂ Ʃ!ƒ ƗơǈǻǨ ǋǒȖƧƥ ƜƦǤǻǈĂ ÜǻǒǒǀǨ!ƒ ƘƒĂƥǀĂ ÜƗǒƑǤǈ!ƒ ƗǒƧƲǈ!ƒĂ

ÜǻĂù Ʃ!ƒ Ǒù5 ǑƑǤǈ!ƒ ǻ ƩǨ!ƒ ƗƑǒǈ ǻǒĂǀǨ! (Kim, Fisher & Fraser, 2000)ƧƨǒƧ5Ă ƧTǒ5Ă ǻǒǂ

Constructivist Learning Environment Survey (CLES) ǑƑǤùǈǈ!ƒ ǻ ƩǨ!ƒ ƗƑǒǈ ƗǈǤǨȖƒĂ

Hand and) ƘȖùȠǒƧǨĂ ƥǈǤǋ ƗȖƒƧƥ Ǒ5 Ǥǻǂ ǑƑǤǈ!ƒ ǻǒ ƩǨ!ƒ Ǐ!ƍ ýĂơǨ!ƒ ýĂơ ǈǰǻ ƩǻƷ!ƒ ƧǤǂ5ƋĂ

Ǒùǻ ƩǻƷ ƻ ùǒƱĂǨ ƗȠƧƥ ƥǒƥơǨ Ǐ!ƍ Ƙ5ƥǋ Ǒǩ!ƒ (2002) ƘǤǂƧǈ ƗǈǤǨȖƒĂ Ü(Treagust, 1991

ǏƧƱǈ!ƒ ƧǤƱǓƒ Ǐ!ƍ Ɨ5ǤưǗǤǈ ÜƗǈǤǨȖǕƒ ƘƒƧǀ5 ýǖƤ ǈǻ ƗǒƑǤǈ!ƒ ƗǒƧƱǈ!ƒ ƏƥǤǻ! ǻĂ Ʃ!ƒ ƘǤǻ ƩǻǻĂ

ƥùƿĂ .(2009Ü Ǒ!ǤƞǻƒĂ ǑǈƷƨ!ƒĂ ƘƒƥƒƧƞ) ǈƥƧǕƒ Ǒ5 ƗǒǻƩ!ƒ ƗǒǈƧǨ!ƒ ƧǒĂƱǨĂ ǈǒȖơǨ YĂƧTǻ!

ǀƧù ǀ5 (48) ǈǻ ƗǒĂǕƒ ǤǋǨƧĂȚǈ ƘǈĂǂǨ Ǒǩ!ƒ ǀƥǕƒ ƧǒĂƱǨ Ǒ5 Ɨ ǈǤȖ!ƒ ƴƞƒƧǻ!ƒ ǈǻ ǀƥǤ5ǨȖǕƒ ǻǩ

ǈùǻ Ɣù!ǤƱ!ƒ ǋùǻǻƩǨǒ Ǥǻ Ü5ƧƩǻ!ƒ ƥǤȚǨƒ Ăơǈ ǻǒǻƩǨ!ƒ ƧǒĂƱǨ :ƘǤƷĂưĂǻ ƗǒǈǤǻǋ Ǐ Ǝ ƗƷƨĂǻ

[illegible]

[illegible]

.(1)[illegible]

[illegible] (SEED) [illegible]

:[illegible]

:[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

9 8 7 [illegible]

[illegible]

[illegible]

[illegible]

.(2) [illegible] (37) [illegible]

:[illegible]

[illegible]

(20) [illegible] (SEED) [illegible]

[illegible]

[illegible]

.(1) [illegible]

(SEED) [illegible] .(1) [illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.52	**0.70**	[illegible]	1	[illegible]
0.51	**0.72**	[illegible]	2	
0.35	**0.64**	[illegible]	3	
0.36	**0.69**	[illegible]	4	
0.57	**0.76**	[illegible]	5	
0.55	**0.80**	[illegible]	6	
0.53	**0.84**	[illegible]	7	
0.65	**0.76**	[illegible]	8	[illegible]
0.50	**0.67**	[illegible]	9	
0.60	**0.73**	[illegible]	10	
0.55	**0.89**	[illegible]	11	
0.39	**0.90**	[illegible]	12	
0.48	**0.91**	[illegible]	13	
0.62	**0.70**	[illegible]	14	
0.50	**0.61**	[illegible]	15	
0.51	**0.60**	[illegible]	16	
0.50	**0.60**	[illegible]	17	[illegible]
0.58	**0.67**	[illegible] (Lap) [illegible]	18	
0.72	**0.83**	[illegible]	19	[illegible]
0.62	**0.80**	[illegible]	20	

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.71	0.84	[illegible]	21	
0.71	0.75	[illegible]	22	
0.74	0.90	[illegible]	23	
0.75	0.90	[illegible]	24	
0.63	0.86	[illegible]	25	
0.68	0.77	[illegible]	26	[illegible]
0.61	0.92	[illegible]	27	
0.62	0.91	[illegible]	28	
0.57	0.91	[illegible]	29	
0.63	0.76	[illegible]	30	[illegible]
0.65	0.72	[illegible]	31	
0.71	0.83	[illegible]	32	
0.58	0.71	[illegible]	33	
0.59	0.72	[illegible]	34	
0.66	0.79	[illegible]	35	
0.62	0.71	[illegible]	36	
0.72	0.82	[illegible]	37	

[illegible] (1) [illegible] (0.84-0.64) [illegible] (0.57-0.35) [illegible] (0.91-0.60) [illegible]

ýǴȠdž ƘƒƧǀ5 ƱǴƙƧƒ Ƙǚdžǵƶdž Džöp LJDĂ ÜǂöǂǨ!ƒ ǀƒþǕƒ ydž (0.65-0.39) LJöƅ ƘơĂƒƧƙĂ Ǵnj!ǴȠdž

Ǵnj!ǴȠdž ydž (0.67-0.60) LJöƅ ƘơĂƒƧƙ þp DžĂǂƶ!ƒ ƩöƧþƙ Ŏ5 ƔöƧȠƙ!ƒĂ ǂƱơǚdž!ƒ ƧĂþ

ƩƧþ ýǴȠdž ƘƒƧǀ5 ƱǴƙƧƒ Ƙǚdžǵƶdž Džöp LJDĂ ÜǂöǂǨ!ƒ ǀƒþǕƒ ydž (0.58-0.50) LJöƅ ƘơĂƒƧƙĂ

ǀƒþǕƒ ydž (0.75-0.62) LJöƅ ƘơĂƒƧƙĂ Ǵnj!ǴȠdž ydž (0.90-0.75) LJöƅ ƘơĂƒƧƙ þp þöȠ!ƒ DžĂǂƶ!ƒ

ydž (0.92-0.77) LJöƅ ƘơĂƒƧƙ þp DžöĂǀƙ!ƒĂ Džööǀƙ!ƒ ýǴȠdž ƘƒƧǀ5 ƱǴƙƧƒ Ƙǚdžǵƶdž Džöp LJDĂ ÜǂöǂǨ!ƒ

ƘƒƧǀ5 ƱǴƙƧƒ Ƙǚdžǵƶdž Džöp LJD ÝǂƧöƤDĂ ÜǂöǂǨ!ƒ ǀƒþǕƒ ydž (0.68-0.57) LJöƅ ƘơĂƒƧƙĂ Ǵnj!ǴȠdž

(0.72-0.58) LJöƅ ƘơĂƒƧƙĂ Ǵnj!ǴȠdž ydž (0.83-0.71) LJöƅ ƘơĂƒƧƙ þp ŎƑǴǈƅ!ƒ Džöǂƶƙ!ƒ ýǴȠdž

.ǂöǂǨ!ƒ ǀƒþǕƒ ydž

:ĬǂƇƐƍǁƐ ƄƑǵǴǁƐ ƼƍƬ .ǂ

ƏþǴùƕdž! LJöùdžǂƶdž!ƒ ǁǚƙùdžƒ ăþdž Ƨöþǀƙ ǀƒþǕ ŎǂƤƒþ!ƒ ƇǴǈƅ!ƒ ƫþƮ LJdž ƫǀơƙ!ƒ ƯƒƧƺǕ

ƘǙǴùȠdž!ƒ LJöƅ ƱǴƙƧǙƒ Ƙǚdžǵƶdž ƔǴƪơ Džƙ þǀ5 Ý(SEED) YĂƧTdž Ŏ5 ƘƦ5ǀǰ Ŏƙ!ƒ ŎƑǴǈƅ!ƒ Džǂƶƙ!ƒ

Ŏù5 Ǵdžǂ ǁ!ƦĂ ÜǀƒþǕƒ ƘǙǴȠdž! ǂöǈöƅ!ƒ ƱǴƙƧǙƒ Ƙǚdžǵƶdž ƔǴƪơ Ĭ!ǫ ǂ5ǴƯǗǴƅ ÜǂöǂǨ!ƒ ǀƒþǕƒ LJöƅĂ

.(2) ýĂþȠ!ƒ

[illegible] (2) [illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	0.49					
	[illegible]	0.000					
[illegible]	[illegible]	0.39	0.81				
	[illegible]	0.000	0.000				
[illegible]	[illegible]	0.46	0.77	0.76			
	[illegible]	0.000	0.000	0.000			
[illegible]	[illegible]	0.43	0.55	0.58	0.53		
	[illegible]	0.000	0.000	0.000	0.000		
[illegible]	[illegible]	0.60	0.62	0.64	0.77	0.63	
	[illegible]	0.000	0.000	0.000	0.000	0.000	
[illegible]	[illegible]	0.70	0.86	0.82	0.88	0.73	0.88
	[illegible]	0.000	0.000	0.000	0.000	0.000	0.000

[illegible] (2) [illegible] (0.88-0.70) [illegible] (0.81-0.39).

[illegible]:

[illegible] Cronbach's Alpha [illegible] (3).

[illegible] :(**3**) [illegible]

[illegible]	[illegible]	[illegible]	[illegible]
7	0.88	0.90	[illegible]
9	0.93	0.88	[illegible]
2	0.88	0.88	[illegible]
7	0.92	0.88	[illegible]
4	0.92	0.90	[illegible]
8	0.87	0.91	[illegible]
37	0.87	0.97	[illegible]

[illegible] (0.97) [illegible] (3) [illegible] (0.87) [illegible] (0.91-0.88) [illegible] .(0.93-0.87)

[illegible] (**SEED**) [illegible]

[illegible]

[illegible] (SEED) [illegible] (2011) [illegible] (Cornin& Padilla, 1986) [illegible] (2004) [illegible]

!NJƗƨƥƑDŽDŽ hƜƥƍǁ (SEED) ƱNjƥʅDŽǴ DŽǐƭƟƗDŽǁƐ !NjǂƴǁƐ ǏDŽǂƴDŽ ƥǐƍƭƗ ƔƐƍǴ ǀƐƥƨƺ ƯƑǴƗƥƐ ǀǗDŽƑƴDŽ .(4) ǘNjƍǁǁƐ

.ƑNJǁ ƯǴƗ ǏƗǁǁƐ ǀǗƑǁDŽǁƐNj hǔǂǀǁƐ ƔƐƍǗƐ ƯDŽ hǂDŽƑǀƗDŽǁƐNj hǔƨƑƨǗƐ !ǂƴǁƐ ǀƑǐǂDŽƳ

ƔƍƐǗƐ hǔǂǀǁƐ	ƍƴǴǁƐ	!ǂƴǁƐ ǀƑǐǂDŽƳ ǀƐƥƑNJDŽǁ DŽǐDŽǂƴDŽǁƐ ƥǗǂDŽƐ hƜƥƍ ƧƑǐƨDŽ ǀƐƥƨƺ DŽNjƥDŽʅDŽ ǈƍƑƴǗ ƒƨƺNj hǂDŽƑǀƗDŽǁƐNj hǔƨƑƨǗƐ	ƔƥƨƧǁƐ !ƺƥ	ǘƑǁDŽǁƐ
0.53	0.88	ǑƼƧƺDŽ!ƒ ƥǴʅƙƤǕƒ ǑƼ DŽǁƺDŽ!ƒ ƧǍƥ	1	ǑƼƧƺDŽ!ƒ ƥǴʅƙƤǕƒ
0.49	0.86	ǑƼƧƺDŽ!ƒ ƥǴʅƙƤǕƒ ƇǍư ǑƼ DŽǁƺDŽ!ƒ ǴNjDŽƥƤƙʅǒ Ǒƙ!ƒ ƗǒDŽǒǁƺƙ!ƒ ƘǴǒƞǒƙƒƧƙʅǕƒ	2	
0.50	0.85	ǑƼƧƺDŽ!ƒ ƥǴʅƙƤǕƒ ǘƱ ǑƼ Ɣ!ǴƱ!ƒ ƧǍƥ	3	
0.57	0.86	DŽǍǁƺ!ƒ ǀƥǴDŽ ǑƼ ƗƕǁƱǁ! ƗDŽƨǚ!ƒ ƗǒƵǴDŽƙƞǕƒ ƘƒƧǴNjDŽ!ƒ	4	DŽǍǁƺ!ƒ ǑƼ Ɣ!ǴƱ!ƒ NJDŽǁƺƙǒ ǴDŽ
0.53	0.86	DŽǍǁƺ!ƒ ǀƥǴDŽ ǑƼ ƗƕǁƱǁ! ƗDŽƨǚ!ƒ ƗǒƑƒƥǕƒ ƘƒƧǴNjDŽ!ƒ	5	
0.45	0.83	DŽǍǁƺ!ƒ ǀƥǴDŽ ǑƼ ƗƕǁƱǁ! ƗDŽƨǚ!ƒ ƗǒƼƧƺDŽ!ƒ ƘƒƧǴNjDŽ!ƒ	6	
0.57	0.86	DŽǍǁƺ!ƒ DŽǁƺDŽ NJƕ DŽǍǀǒ ƔǍǁʅƋǂ ƔƧǴƞƙ!ƒ ƇƒƧƞƍ ǑƼ ǑDŽǁƺ!ƒ ƲƧƺ!ƒ ƗǀǒƧƱ ƗǒDŽǁƵ ƗǀǒǀƠ ƲƧƵ ǍƊ DŽǒƥǀƙƕ	7	ƔǜǒƧƞƙ!ƒǍ ƗƱƠǚDŽ!ƒ ƧǍƥ .DŽǍǁƺ!ƒ ƩǒƧƥƙ ǑƼ
0.60	0.83	ǴǜNjǈDŽ ƗƵǍǈƙDŽ ƗǒDŽǒǁƺƙ!ƒ ƗǒǁDŽƺ!ƒ ƇǴǈƊ ǴNjǈDŽ ƥǒƨƙʅƊ Ǒƙ!ƒ ƗǒDŽǒǁƺƙ!ƒ ƧƥǴʅDŽ!ƒ ǀƧǍƱƙDŽ ǀƨNjƞƊǍ ƗǒDŽǒǁƺƙ ƴǘǴʅǍǍ ƧƕƙƤDŽ!ƒ ƘƒǍƥƊ	8	
0.53	0.80	ƔʅǴǈDŽ!ƒ ǑDŽǒǁƺƙ!ƒ ƷƤǍDŽ!ƒ ǑƼ ƗƕʅǴǈDŽ!ƒ ǴǒƞǍ!ǍǈǂƙƍƒƗ ǀƥƊ ƷǒƯǍƙ	9	ǑǜƼ ǴǜǒƞǍ!ǍǈǂƙƍƒƗ ƷǒƯǍƙ DŽǍǁƺ!ƒ ƩǒƧƥƙ
0.55	0.73	ǁǴNjǈDŽ!ƒ ǑƼ ǴǒƞǍ!ǍǈǂƙƍƒƗ ƷǒƯǍƙ ǏǁƵ ƗDŽƑǴƤ ƩƧƥ ƗƱƤ ǁǒƨǈƙǍ DŽǒDŽʅƙ	10	
0.52	0.71	DŽǒǁƺƙ!ƒ ǴǒƞǍ!ǍǈǂƙƍƒƗ ǘƑǴʅǍ ƧǍƱƙ ƗƕǂƒǍDŽǍ ƧǒǒƷƙ!ƒ ǍưǈƗǒƕǴƞǒǒ ƘǴNjǴƞƙƒ Ǒǈƕƙ	11	
0.53	0.85	ƥǒƞ DŽǍǁƵ ƩƧƥ ƾǒƕƱƙ ǑƼ ƙǒƨǈƙƒǍ ƱǒƱƤƙ!ƒ ǑƙǁưƧDŽ ƷǒƯǍƙ	12	ƥǒƞ!ƒ DŽǍǁƵ ƩƧƥ
0.61	0.81	ƩƧƥ!ƒ ǎǍƙưDŽ ƔʅǴǈǒ ǴDŽƕ ƗƵǍǈƙDŽ ƗǁƑʅǊ ƟƧƱǍ ƥƒƥƷƍ	13	
0.62	0.85	ǑDŽǒǁƺƙ ƷƤǍDŽ ǑƼ ǁƨǴDŽƙDŽ!ƒ DŽǁƺƙ!ƒ ƷǒƯǍƙ	14	
0.68	0.86	ƘǴƞǴƙǈ!ƒ ƾǒǀưƙ ƙǒƨǈƙ Ɣǂƒǀƙǂ ƗǈǍƧDŽ!Ǵƕ DŽʅƙƙ ƗƱƤ ƥƒƥƷƍ	15	
0.54	0.77	DŽǁƺƙ!ƒ ƗǒǁDŽƵ ǑƼ ǁƨǴDŽƙDŽ!ƒ DŽǒǁƺƙ!ƒ ƗǒDŽNjƊ	16	
0.40	0.81	DŽǍǁƺ!ƒ DŽǁƺDŽ ƧǍƱƙ ǘưƒƧDŽ	17	
0.65	0.84	ǀƥǒƥƞ!ƒ DŽǍǁƺ!ƒ DŽǁƺDŽ ƧƒǍƥƊ	18	
0.57	0.90	ƧǴǜǂƼǕƒ ǘƥǴǜƕƙ! DŽǍǜǁƺ!ƒ ǑDŽǁƺDŽ! ǑǈǍƧƙǂ!Ǘƒ ǘƤǍDŽ!ƒ ǘǚƤ ǈDŽ ǘʅƒǍƙ!ƒ ƩǍƧƥ!ƒ ƱƱƤǍ	19	DŽǍǁƺ!ƒ ǑDŽǁƺDŽ ǈǒƕ ǈǍǴƺƙ!ƒ
0.60	0.92	ǎƧƤǕƒ ǘǍƥ!ƒ ǑƼ ǈǒDŽǁƺDŽ!ƒ ǘDŽ ǘʅƒǍƙ! DŽǍǁƺ! ƗǒDŽ!ǴƵ ǘƥƒǍDŽ ǑƼ ƗưƕƙƐƒ	20	
0.60	0.93	DŽǍǜǁƺ!ƒ ƘǕǴƞDŽ ǑƼ ƗǒǁDŽƵ ǘDŽƵ ƘǴƬƧǍ ƾǒƕƱƙǍ ƥƒƥƵǕ ǈǍǴƺƙ!ƒ ƧǍǴƬƙ!ƒ ƗƼǁƙƤDŽ!ƒ	21	
0.61	0.84	ƗǒǁDŽƺ!ƒ ƲǍƧƺ!ƒ DŽǒƥǀƙ ǑƼ DŽǍǁƺ!ƒ ƘƒƧǴNjDŽ ƧǒǍƱƙǍ ƗǒDŽǈǒ	22	
0.21	0.44	ƗƼǁƙƤDŽ!ƒ DŽǍǁƺ!ƒ ƘǕǴƞDŽ ǑƼ ǘƑǴʅǍ!ƒ ƥƥƺƙDŽ ƲƧƵ ƧǒǍʅƙ	23	
0.64	0.85	ƧƒƧ!ƒ ƙǴƤƙƒǍ ǘǴƺƼ!ƒ ǘʅƒǍƙ!ƒǍ ǑƵƒƥƕǕƒ ƧǒǂƼƙ!ƒ Ɨǒ!Ǵƙ!ƒ ƘƒƧƥ!ƒ ƧǒǍƱƙ	24	
0.70	0.86	ǎǍƙʅǜǈǴ ǏǁƵ DŽǍǁƺ!ƒ ǑʅƧƥDŽ! ǘǒƧǴƬǈ ǘǈƵ ǘǚƤ ǈDŽ ƥƺƕ ǈƵ ƗǂƧǴƬDŽ!ƒ (ƷʅǍ!ƒ ƗƼƧƹ) ƗǂǁǈDŽ!ƒ	25	
0.35	0.82	DŽǈǒǴǒǍǍʅǈ ƗƼƧƺDŽǍ DŽǈǒǴǒƞǴư ƥǒƥƞƙǍ DŽǈǒʅƙǁƤ DŽǒǍǀǒ ǏǁƵ ƗƕǁƱ!ƒ ǀƥƵǴʅǈ	26	DŽǒǍǀǒ!ƒǍ DŽǒǒǀǒ!ƒ
0.55	0.90	DŽǁƺƙ!ƒ ǏǁƵ ƗƕǁƱ!ƒ ƨǒƨưƙ	27	
0.58	0.72	ƗƕǁƱ!ƒ DŽǁƺƙ ƒ ǒƤƮƙ	28	
0.56	0.82	DŽǍǜǁƺƙ NJƑǴǜƙǈ ǏǁƵ ƔǚƱǚ! ƧƒƧ!ƒ ƔǴưʅDŽǍ ƧǍDŽǕƒ ƇǴǒ!ǍƊ ǘDŽ ǘʅƒǍƙ!ƒ ƗƕǁƱ!ƒ	29	
0.54	0.57	ǴǍǍƕƧƙǍ ǴǁǈNjDŽ ƗƕǁƱ!ƒ ƥǴƮƧƍ ǑƼ ƥƷǴʅƙ ƘǴDŽǍǁƺDŽƕ ǐǍƕƧƙ!ƒ ƥƮƧDŽ!ƒ ƥǒǍƨƙ	30	
0.43	0.53	ǴNjǒǒǁƵƙǍ DŽǒǍǀǒ!ƒ NJƑǴǂǈ ǈDŽ ǀƥǴƼƙʅǕƒ	31	
0.60	0.90	ƗƕʅǴǈDŽ!ƒ ǘǍǁƵ!ƒ ƟƧƙƒǍ ƗǒƙǴǒƵƠ ƘǚǂƮDŽ!ƒ ǘDŽ ǘDŽǴƺƙ!ƒ	32	
0.46	0.65	ǴǒǁDŽ!ƒ ƗǒǁǁƵ!ƒ ƘƒƧǴNjDŽ!ƒ ƗǒDŽǈǒ	33	
0.46	0.68	ƗƕǁƱ!ƒ ƘƒƨǴƞǈǒ ǏǁƵ ƨǒǂƧƙ!ƒ	34	

[illegible]		[illegible]	[illegible]	[illegible]
[illegible]	[illegible]			
0.56	0.76	[illegible]	35	[illegible]
0.50	0.76	[illegible]	36	
0.42	0.66	[illegible]	37	
0.56	0.81	[illegible]	38	
0.63	0.83	[illegible]	39	
0.46	0.74	[illegible]	40	
0.61	0.79	[illegible]	41	
0.56	0.80	[illegible]	42	
0.55	0.78	[illegible]	43	
0.53	0.55	[illegible]	44	
0.63	0.64	[illegible]	45	
0.61	0.74	[illegible]	46	
0.55	0.85	[illegible]	47	

[illegible] (4) [illegible] (0.53-0.49) [illegible] (0.88-0.85) [illegible]

(0.86-0.83) ǋǰǿ ƘơǍƒƧƙ ƥƿ ǅǍǈƺ!ƒ Ǒ5 Ɣ!ǴƱ!ƒ ǊǆǅǈƺƙǑ ǴǆǏ ƴǴƞǆǏ ƘƒƧǀ5 ƱǴǀƙƧƒ Ƙǚǆǅǵƺǆǅ ǅǑƿ

ƘƒƧǀ5 ƱǴǀƙƧƒ Ƙǚǆǅǵƺǆǅ ǅǑƿ ǋǇǍ ǛƗǑǉǂ!ƒ ǀƒƥǛƒ ƴǆǅ (0.57-0.45) ǋǰǿ ƘơǍƒƧƙǍ ǴǌǑ!ǴƞǆǏ ƴǆǅ

ǴǌǑ!ǴƞǆǏ ƴǆǅ (0.86-0.77) ǋǰǿ ƘơǍƒƧƙ ƥƿ .ǅǍǈƺ!ƒ ƩǑƧƥƙ Ǒ5 ƔǑƧƞƙ!ƒǍ ƗǗơǚǆǅ!ƒ ƧǍƥ ƴǴƞǆǏ

ƻǑǗǍƙ ƴǴƞǆǏ ƘƒƧǀ5 ƱǴǀƙƧƒ Ƙǚǆǅǵƺǆǅ ǅǑƿ ǋǇǍ ǛƗǑǉǂ!ƒ ǀƒƥǛƒ ƴǆǅ (0.60-0.40) ǋǰǿ ƘơǍƒƧƙǍ

ǋǰǿ ƘơǍƒƧƙǍ ǴǌǑ!ǴƞǆǏ ƴǆǅ (0.80-0.71) ǋǰǿ ƘơǍƒƧƙ ƥƿ ǅǍǈƺ!ƒ ƩǑƧƥƙ Ǒ5ǴǑƞǍ!ǍǋǂƙǑ!ƒ

ƥƿ ƥǑƞ!ƒ ǅǍǈƺ!ƒ ƩƧƥ ƴǴƞǆǏ ƘƒƧǀ5 ƱǴǀƙƧƒ Ƙǚǆǅǵƺǆǅ ǅǑƿ ǋǇǍ ǛƗǑǉǂ!ƒ ǀƒƥǛƒ ƴǆǅ (0.55-0.52)

ǋǇǍ ǛƗǑǉǂ!ƒ ǀƒƥǛƒ ƴǆǅ (0.68-0.40) ǋǰǿ ƘơǍƒƧƙǍ ǴǌǑ!ǴƞǆǏ ƴǆǅ (0.86-0.77) ǋǰǿ ƘơǍƒƧƙ

ƴǆǅ (0.93-0.44) ǋǰǿ ƘơǍƒƧƙ ƥƿ ǅǍǈƺ!ƒ ǑǆǅǈƺǆǏ ǋǰǿ ǋǇǍǴƺƙ!ƒ ƴǴƞǆǏ ƘƒƧǀ5 ƱǴǀƙƧƒ Ƙǚǆǅǵƺǆǅ ǅǑƿ

ƴǴƞǆǏ ƘƒƧǀ5 ƱǴǀƙƧƒ Ƙǚǆǅǵƺǆǅ ǅǑƿ ǋǇǍ ǛƗǑǉǂ!ƒ ǀƒƥǛƒ ƴǆǅ (0.70-0.21) ǋǰǿ ƘơǍƒƧƙǍ ǴǌǑ!ǴƞǆǏ

ƴǆǅ (0.60-0.35) ǋǰǿ ƘơǍƒƧƙǍ ǴǌǑ!ǴƞǆǏ ƴǆǅ (0.90-0.53) ǋǰǿ ƘơǍƒƧƙ ƥƿ ǅǑǍǀƙ!ƒǍ ǅǑǑǀƙ!ƒ

ǋǰǿ ƘơǍƒƧƙ ƥƿ ǅǈƺ!ƒ ƘǴǑǈǆǅƵ ƴǴƞǆǏ ƘƒƧǀ5 ƱǴǀƙƧƒ Ƙǚǆǅǵƺǆǅ ǅǑƿ ǋǇ ƳƫƧǑƤǇǍ ǛƗǑǉǂ!ƒ ǀƒƥǛƒ

.ƗǑǉǂ!ƒ ǀƒƥǛƒ ƴǆǅ (0.63-0.42) ǋǰǿ ƘơǍƒƧƙǍ ǴǌǑ!ǴƞǆǏ ƴǆǅ (0.85-0.55)

:ǏǂǠǫǈǁ ƅƑǅǴǁǁ ƼǫƬ .Ƈ

ƘƒƧǴǜǌǆǅ ǋǰǜǆǅǈƺǆǅ!ƒ ǁǚƙǜǆǅǫ ǎƥǜǆǅ ƧǑƥǀƙ ǀƒƥǛ ǑǈƤƒƥ!ƒ ǴǋǋǰǷ!ƒ ƭƥƮ ǋǆǅ ƭǀơƙ!ƒ ƯƒƧƺǛ

ƘǙǴǜƞǆǅ!ƒ ǋǰǿ ƱǴǀƙƧǙƒ Ƙǚǆǅǵƺǆǅ ƔǴƪơ ǅǑƙ ƥǀ5 Ƴ(SEED) ƳǍƧƬǆǅ Ǒ5 ƘƦ5ǋǰ Ǒƙ!ƒ ǅǈƺ!ƒ ƘǴǑǈǆǅƵ

Ǒǜ5 ǴǆǅǂǁǀǍ ǛǀƒƥǛƒ ƘǙǴƞǆǅ! ƗǑǋǰǿ!ƒ ƱǴǀƙƧǙƒ Ƙǚǆǅǵƺǆǅ ƔǴƪơ Ǐ!ǫ Ƈ5ǴƯǗǴǿ ǛƗǑǉǂ!ƒ ǀƒƥǛƒ ǋǰǿǍ

.(5) ƴǍƥƞ!ƒ

[illegible] .(5) [illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	0.19							
	[illegible]	0.042							
[illegible]	[illegible]	0.33	0.59						
	[illegible]	0.000	0.000						
[illegible]	[illegible]	0.47	0.27	0.31					
	[illegible]	0.000	0.003	0.001					
[illegible]	[illegible]	0.48	0.28	0.43	0.83				
	[illegible]	0.000	0.002	0.000	0.000				
[illegible]	[illegible]	0.22	0.57	0.66	0.43	0.49			
	[illegible]	0.014	0.000	0.000	0.000	0.000			
[illegible]	[illegible]	0.31	0.48	0.64	0.26	0.34	0.58		
	[illegible]	0.001	0.000	0.000	0.005	0.000	0.000		
[illegible]	[illegible]	0.41	0.45	0.47	0.33	0.32	0.38	0.67	
	[illegible]	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
[illegible]	[illegible]	0.63	0.63	0.79	0.60	0.65	0.76	0.78	0.77
	[illegible]	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

[illegible] (5) [illegible] (0.79-0.60) [illegible] (-0.19 [illegible] .(0.83

[illegible] :

[illegible] Cronbach's Alpha [illegible] .(6) [illegible]

.(6) [illegible]

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	0.92	**0.86**	3
[illegible]	0.71	**0.92**	3
[illegible]	0.90	**0.85**	2
[illegible]	0.85	**0.91**	3
[illegible]	0.83	**0.89**	7
[illegible]	0.91	**0.91**	7
[illegible]	0.95	**0.87**	9
[illegible]	0.92	**0.82**	13
[illegible]	0.96	**0.86**	47

[illegible] (6) [illegible] (0.96) [illegible] (0.86) [illegible] (0.95-0.71) [illegible] (0.92-0.82) [illegible].

[illegible] :

[illegible]:

[illegible] (2012) [illegible] (Sawada & piburn, 2000) [illegible] (Brewer and Daane, 2002) [illegible]

(34) [illegible]

[illegible] :(4) [illegible]

[illegible] (4)[illegible] (5)[illegible]

[illegible] (2)[illegible] (3)[illegible]

.(1)[illegible]

[illegible]

:[illegible]

:[illegible] .[illegible]

[illegible] (34) [illegible]

[illegible]

[illegible] (23) [illegible]

.(5)[illegible]

:[illegible] .[illegible]

[illegible] 10 [illegible]

[illegible] %99.0 [illegible] Inter-Rater [illegible]

[illegible]

ǴùnjƘƲơǚdž LJöhĂ Ĭ!ĂŪƒ ǴnjƘƲơǚdž LJöh Intra-Rater ǑƘƒƦ!ƒ ƽǴ5ƘŬƒ ƗhƪǉƔǴƪơ ƻþnjh ÝĬ!ĂŪƒ

ǗǑƘƪù!Ănj Ɨ!þǴƶdž DžƒþƤƘƪǴh ǁ!ƦĂ Ü%97.2 ǴnjƘdžöþ Ƙƺǁh ƗöơÜƗöƵǘƱƘƪŬƒ Ɨǉöƶ!ƒ þƒƧ5Ū ƗöǉǴƛ!ƒ

:ĬǁƵ Ňƒ ǉƘ ǑƘ!ƒ

$$\text{نسبة التوافق بين الملاحظين} = \frac{\text{عدد مرات الاتفاق بين الملاحظين}}{\text{عدد مرات الاتفاق بين الملاحظين} + \text{عدد مرات الاختلاف بين الملاحظين}} \times 100\%$$

%100-80 LJöùh ƟĂƒƧƘƘ NjƘǴhƛĂ ýöǁơƘ!ƒ ƽþƮ! Ɨ!ĂhǀǀdžƒLJöǁǁơdž!ƒ LJöh ƽ5ƒĂƘ!ƒ ƗhƪǉLJǁh ǴdžǁƵ

.(Chiappetta, Fillman, &Sethna, 1991: 713-725)

:þƒdžǴǁƐ ƼƣƮ .Ɨ

Ǒùdžǁƶdž ƻùöƲĂƘ ƗùƞƧþ þöþơƘ! Ɨö5Ʈ!ƒ ƗƲơǚdž!ƒ ǀþŪ ǅǴǉh!ƒ ƽþƮ LJdž ƽǀơƘ!ƒ ƯƒƧƺŪ

Üýùǂǂ ǀþŪƒ ydž ǀþŪƒ ƘƒƧǀ5 LJöh LJĂƪƧöh ƱǴhƘƧƒ ýdžǴƶdž ƔǴƪơ DžƘ ÝǑƒǴǉh!ƒ DžǁƶƘ! ƏþǴhdž DžĂǁƶ!ƒ

.(7) ýĂþƞ!ƒ Ǒ5 LJöhdž ĂNj Ǵdžǂ ǁ!ƦĂ

.hǐǂǁǁƐ ƔƐƣŬƐ ƲDž ƔƐƣŬƐ ǀƐþƽƺ ƯƑǴƗþƐ ǀǘDžƑyDž .(7) üNjƣǁǁƐ

الدلالة الإحصائية hǐƏƑƮƟŪƐ	معامل الارتباط ƯƑǴƗþŬƐ	ƺøøøǐƲNjƗ høøøǁþƣ høøøƲƟǘDž høøø5ƑƲǴ ǀƐþøøøƽƺ DžǐDžƑƮøøøDž hǐ2Ʈǁǁ hƺþƐǁ Ĭƺ ĬƏƑǴǁƐ !ǂyǁƐ ƍƣƑǴDž !Njǂyǁ ĬDžǂyDž	!ø5þ ƔþƽƧǁ
0.043	**0.31**	DžnjƪƽǉLJh ĬǉƶdžƒǅǴǉh ĬǁƵ LJöǁdžǁƶƘdž!ƒ þƵǴƪö	1
0.000	**0.57**	ƻƧǴùƶdž LJùdž Nùöþ! Ǵùdžh ǀþùöþƞ!ƒ ƻƧǴƶdž!ƒ ƱhƧ LJdž NǉǂdžƘ ƘƒƧhƤh DžǁƶƘdž!ƒ þĂƨö Ɨö5Ƨƶdž!ƒ NƘöǉh ydž DžDĂƘö Ǵdžh Ɨöǁhǀ!ƒ ƻƧǴƶdž!ƒ ýöǂƮƘ ǀþǴƵŬ ÜƗǀhǴƪ	2
0.000	**0.75**	ǑùƘöǁǁdžƵ LJöùh LJƨƒĂùƘ!ƒ ýǘƤ LJdž Ɨö5Ƨƶdž!ƒ ƱĂƺƲ!ƒ ydž ƻöǂƘ!ƒ ĬǁƵ DžǁƶƘdž!ƒ þƵǴƪö ƗdžǅƒĂdž!ƒĂ ýƛdžƘ!ƒ	3
0.000	**0.63**	DžǁƶƘdž!ƒ þǉƵ ǀþĂƞĂdž!ƒ ƗöǀdžöNjǴ5dž!ƒ Ɨöǉh!ƒ ƻǴƮƘǂƒ Ɨ!ĂǴơdžh þöþƞ!ƒ NƵĂƲĂdž Ƿþhö	4
0.000	**0.71**	ǴnjhöĂƮƘ ĬǁƵ ýöǀžöĂ ƋƱƤ!ƒ DžöNjǴ5dž!ƒ LJƵ ƻƮǂö	5
0.000	**0.75**	ǀǴùöơh ƗǁƮ ƘƒƦ ƗöǀöǀơƗödžöǁƶƘ ƘǘǂƮdžĂ ƘǴdžnjdž ýǂƮ ĬǁƵ ƩƧþ!ƒ YĂƲĂdž Džþǀö DžnjƶþƒĂĂ LJöǁdžǁƶƘdž!ƒ	6
0.000	**0.53**	DžǁƶƘ!ƒ Ɨöǀdžƶ! ǴdžƲǉdžĂ ƒƧƪödž LJǴöơŪƒ DžƲƶdž Ǒ5 LJĂǂö	7
0.045	**0.30**	DžnjdžǁƶƘ ǅǴǉƊ ǀþþƶƘdž ƧþǴƮdž DžƒþƤƘƪƒ ĬǁƵ DžǁƶƘdž!ƒ yƞƮö	8
0.000	**0.77**	DžnjǉöhǴdžö5 ýdžǴǂƘ!ƒ ƽöǀơƘ! ƩöƧþƘ!ƒ ǅǴǉƊ ǎƧƤŪƒ þƒĂdž!ƒĂ NƘþǴdž LJöh ƱhƧö	9
0.000	**0.63**	LJöǁdžǁƶƘdž!ƒ ǎþ! ƗöǁƤƒþ!ƒ ƗöƶƸƒþ!ƒ ƗödžǉƘ ĬǁƵ ǴƮöƧơ LJĂǂö	10
0.000	**0.87**	LJöǁdžǁƶƘdž!ƒ LJöh ƗöþƧƨ!ƒ ƽĂƧƨ!ƒ ǑƵƒƧö	11
0.000	**0.50**	LJĂƧƤŪƒ N!ĂǀöǴdž! DžƒƧƘơǓƒ LJdž ƣǴǉdž ƧöƼĂƘ ĬǁƵ ƒƧơö	12

ǃǿƽƥ ǋƥƹƖǁ	ǃǿǿǿǿǳǻǼǈ ǚǝǿǿǿǿǿ ǈǸǿǿǿǿǿǾƖǿǿǿǿǿǽǤ ƣǿǿǿǿǿǿǓ ǋƹǈǃǁƢ ǋƹƶǦ ǃǿǿƥƹǿ ǆƹǐƖǈ ǀƺǈƥǐ ǋǼǗǈ ǋǮǐ ǋǻƵƢ	ǜǍǿƴǈ ǛƵǴŁƥǛǁ	ǋǿǿǿǈǛǒǷǁ ǋǯǂƢŦƟǛǁ
13	ŁöǐŹǴšƙ ŁƱŢǈǷ ǻǛǈǰ	**0.80**	0.000
14	ǤǠƞ ƞƺǴǛƵ ǚǤƖƞ ǈƚǤ ƙǴǈǰ ǈƞ ǁǤƞǼ ƙǴǈ ǈǙƞ ǿǮǤ	**0.35**	0.039
15	ǚƞǻǙ ǀǈǛǀ ǻǿǈǙ ǤǦƞ ǈǼǖ ǻǙǀƞ ǁƖǀǤǙ Ǥǿƹǀǚǿ ǤǿǙǿǌǞ ƖǿǙǤǿǈǯ ǯǻƞ ǤǼǿǀǛǛ ǈǤǼǻǛǮƞǯǈ Ǌƙǖ ǈǤƞǈǤǛǚǈǈ ǈƢǙǛƞǯǈ ǀǈǤǯǙǈƞƙǈǛǯƞƖ ƙǻǙǤǚǯǈǁ	**0.90**	0.000
16	ǁǛǻƙǈǈ ƠǙǁǈƞǿǚǁǈƚ ǁƙǁǿƞǚ ǈǤǈǻǤǚ ǈǞǤǻǿ ǛǤǻǈǀǤǿǈ ǋǤǛǈƟǈ ǻǌǤǈƞǛǞǯ ǁƞǛƠǈ	**0.93**	0.000
17	ǻǙƖ ǈƥǻǈƞǈƞ ǛǞǈƢǛ ǈǁǛǛƞǈǤǛǁ ƞǈǚǛǤƞ ǛǻƞǈƞƞǛƟǞǈ	**0.79**	0.000
18	ǈǁƙǐ ǈǻǈǿǜǈǤ ǈǈǚǈǞǤǛǚǿ ǁǈǿǤǁ ǈǤǈǈǚ	**0.50**	0.000
19	ǈǻǈǿ ǤǤǛǈǚǞǈ ǈǤ ǈǛǤǻǈǿǤ ǈǁǈǚ ǈǤǛǤǛ	**0.58**	0.000
20	ǚǻǤǈ ǁǈǤǻǈǚǤǛǻǈǿǈǙǞǈǤǛ ǈǈǤǙǈǞǁǤǛǿǈ ǈǁǤǤǙǈǤǈǤ	**0.92**	0.000
21	ǤǞǤǁǤǚ ǁǛǤǈ ǤǚǤƙǛ ǈǤǈǈǤǛǈǚǻǿǈǤ ǁǈǤǛǤǚǛǞǈ	**0.73**	0.000
22	ǚǤǞǈ ǁǚǤǤǛǈǛǁǈǤ ǈǻǁǈǛ ǛǛǈǁǈǿǈǚǿ ǤǛǈǛǈǤǛǤǚǛ ǁǿǤǈǞǻǿǛ ǁǈǤǞǈǤ ǈǈǁǛǤǚǤǛǈǈǤǤǈǞ ǈǤǈǁǞǈǁǤǛ ǁǈǤǤǁǚǛǤǤǛǈǈ	**0.31**	0.042
23	ǁǈǈǚǤǈǚǤǈǈǈǤǈǛǈǁǈǈǤǛ ǈǤǈǿǤǛǤǈǈǤǈǤǈǁǤǞǈǤ ǈǤǁǈǤǈǤǚ ǈǈ :(ǁǤǚǁǈǚǞǛǤ ǈǁǤǤǚ ǈǁǤ ǤǛǈǤǤ ǈǤǤǚǈǈǤǤ ǈǈǁǤǤ (ǈǈǤǤǈǁǈǤǈǁ ǈǤǤǁ	**0.32**	0.032

ǁǤǈǈǤǚ ǈǁǈǚǈǈǈǤ ǈǁ ǈǤǈǈǈǁ ǈǁǈǤǤ ǈǤǈǁǈǚǈǁǤǈǁǚ ǈǤǈǤǈǈǤǈǁ ǁǈǤ Ü(7) ǈǤǁǁǈǈǤǈǤǈ ǤǈǤǚǈǤ

.(0.05≥α) ǈǈǤǁǈǁ ǈǤǈǤǈǤǚ ǁǤǁǤ ǈǈǤǤǚǤǤǛ ǁǈǤǈǁ ǈǁǈǤǚǤǈǤǚ ǈǈǤǤǈǁǈ Ü(0.93-0.31)

:ǤǈǤǛǈǁ ǈǤǛǤ .ǚ

ǚǤǤǈǁǈǚǤǈǤǈǤ ǈǁǤǈǈǈǤ ǈǤǤǤǚǈǈ ǈǁǈǈǤǈǤǁǈǁǈ ǈǤǈǚǤǤǈǈǤǈǁǈǤ ǈǈǤǈǤǚǈǤǤ ǁǈǤ ǈǈǤǁǈǁ ǁǈǈǤǈǈǈǤ

ǈǤǈǤǈǤ ǈ ǤǤǈ ǈǈǤǈǈǁǈǤǈǈǁ ǈǁǤǈǤ ǈǤǈǈ ǁǤǤ ǈǈǤǁǤǈǤǈǤ ǁǤǤǈǤǈǤǤǈ 10 ǁǤǤ ǈǤǈǚǤ ǈǤǈǤǈǚǈǤ ǈǁǤǈǤ ǈǈǤ

ǈǤǈǤǚǈǤǈǁǈ ǈǁǤǈǈǁ ǈǈǁǈǤ ǈǈǤǤǤǤ ǁǈǤǈǤǚ ǈǈ ǈǁǈǤǈǤǈǤ ǈǈǚǤ ǁǤǤ ǈǁǤǈǁǈǈǤ ǈǁǈǁǈǤǈǤ Ü(0.93) ǁǈǤǈǤǈ

ǤǤǈǈǤǈǈǤ ǈǤǤǚǈǤǤ ǈǈǤǚǤǈǤǈ Ü-ǈǈǈǤǈ ǁǈǈǈ ǈǈǈǤǈǁ ǈǈ ǈǤǈǁ ǈǈǤǈǁ ǈǤǈǤǤǤǚǈǁ ǁǤǤ ǈǈǤ ǈǈǤǤǤ ǈǤǤ

.(0.87) ǈǈǤǈǁǈ ǈǚǈǤ ǈǤǤǈ ǈǤǤǈ ǈ ǈǤ ǈǈǤǁǈǈǁǈǈ ǈǈǈǁǈ ǁǈǤǈǤǤǚǈǁ ǁǤǤ ǁǈǈǈǈǤǤ

(**SEED**) [illegible]

[illegible]

[illegible]

[illegible]

[illegible] (Martin et al., 2001 [illegible]1998 [illegible]1994 [illegible]) [illegible]

[illegible] (2012) [illegible]

[illegible] (2006) [illegible]

[illegible]

[illegible] (42) [illegible]

[illegible](5)[illegible] (6) [illegible]

[illegible](3)[illegible](4)[illegible]

.(1)[illegible](2)[illegible]

[illegible]

[illegible]

(42) [illegible]

[illegible]

[illegible]

(33) [illegible]

.(7) [illegible]

:[illegible] .f

[illegible] 10 [illegible]

[illegible]

[illegible] Inter-Rater [illegible]

[illegible] %98.2 [illegible]

Intra- [illegible]

[illegible] Rater

:[illegible] %100.0 [illegible]

$$\text{نسبة التوفق بين الملاحظين} = \frac{\text{عدد مرات الاتفاق بين الملاحظين}}{\text{عدد مرات الاتفاق بين الملاحظين} + \text{عدد مرات الاختلاف بين الملاحظين}} \times 100\%$$

.(8) [illegible]

.[illegible] .(**8**) [illegible]

[illegible]	[illegible]	[illegible]	[illegible]
22	**96.4**	**100.0**	[illegible]
3	100.0	100.0	[illegible]
4	75.0	100.0	[illegible]
3	100.0	100.0	[illegible]
3	100.0	100.0	[illegible]
2	100.0	100.0	[illegible]
3	100.0	100.0	[illegible]
4	100.0	100.0	[illegible]
11	**100.0**	**100.0**	[illegible]
2	100.0	100.0	[illegible]
2	100.0	100.0	[illegible]
1	100.0	100.0	[illegible]
1	100.0	100.0	[illegible]
2	100.0	100.0	[illegible]
3	100.0	100.0	[illegible]
33	**98.2**	**100.0**	[illegible]

[illegible] .1

[illegible] .(9) [illegible]

[illegible] .(9) [illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.44	0.62	0.81	[illegible]	1	[illegible]	[illegible]
0.42	0.52	0.89	[illegible]	2		
0.70	0.76	0.80	[illegible]	3		
0.69	0.79	0.83	[illegible]	4	[illegible]	
0.80	0.85	0.95	[illegible]	5		
0.74	0.74	0.76	[illegible]	6		
0.62	0.72	0.74	[illegible]	7		
0.39	0.46	0.52	[illegible]	8	[illegible]	
0.45	0.57	0.85	[illegible]	9		
0.57	0.70	0.83	[illegible]	10		
0.69	0.70	0.76	[illegible]	11	[illegible]	
0.54	0.60	0.85	[illegible]	12		
0.67	0.73	0.87	[illegible]	13		
0.89	0.90	0.93	[illegible]	14	[illegible]	
0.59	0.65	0.89	[illegible]	15		
0.70	0.71	0.76	[illegible]	16	[illegible]	
0.59	0.60	0.69	[illegible]	17		

ƔƐƌǕƐ ƕǓǂǀƐ	ǕƭƜƊƐ	ƋƴƓƐ	ƔƙƨƐ ƊƝƟƊƮƊ	!øø5ƙ ƔƙƨƐ	ƋƴƓƐ	ǕƭƜƊƐ
:ƜƊ ƯƓǂƙǕƐ ǖƊƴƊ						
0.63	0.73	0.83	ƘƓùpǔz!ƒĂ ƜƓƊ!ƒ Ɨ!Ǔƙ ƘƒƧõƺk!ƒ ƻƮĂ ƗƘƵ ƊƵƺƞƊ!ƒ ƙƵƓƪƞ ƗƊõƵƺƞ ƗƒõƬ ƐõƝƊ ƓƝƜõƬ	18		
0.55	0.56	0.85	ƖƙĂƙơƊ ƨƒƓƖơ ƗƘƵ ƗƊƒƓp ƘƓƜõƊƤƞ ƊõƙƖƞ ƗƘƵ ƊƵƺƞƊ!ƒ ƙƵƓƪƞ ƗƊõƵƺƞ ƓƼĂƧƱ ƐõƝƊ ƗƱơǖƊ! ƗƜƓp	19		
0.59	0.72	0.92	ƓùƝƊõƊƺƞ ƨùõƧƱ ƜùƵ ƘƓpǔz!ƒ ƟƧƮ ƗƘƵ ƊƵƺƞƊ!ƒ ƙƵƓƪƞ ƗƊõƵƺƞ ƓƼĂƧƱ ƐõƝƊ ƗƱơǖƊ ƧõƸ ăƧƤƊ ƗƒƙơǕ	20		
0.58	0.86	0.98	ƘƓùpǔz!ƒ ƜùƵ ƧõƵƞƊ! ƊƓpƧǕƒ ƊƒƙƤƞƪƒ ƗƘƵ ƊƵƺƞƊ!ƒ ƙƵƓƪƞ ƗƊõƵƺƞ ƓƼĂƧƱ ƐõƝƊ ƖƙƙơƊ ƖƧƓƵƺƵ	21	ƊƒƙƤƞùùƪƒ ƊƓpƧǕƒ	ƗƊƊƓǂƞƊ!ƒ
0.49	0.79	0.98	ƗùƜƓp ƘƓùƊĂƵƺƊ ƊƒƙƤƞùƪƓƵ ƧõƪùƼƞ!ƒ ƗƘƵ ƊƵƺƞƊ!ƒ ƙƵƓƪƞ ƗƊõƵƺƞ ƓƼĂƧƱ ƐõƝƊ ƓƝƜƵ ƠƊǂ!ƒ ƧõƵƺƞ!ƒĂ ƗƱơǖƊ!	22		
0.72	0.77	0.98	ƗùƜƓ!ƒ ƘƓùƜƓõƵ!ƒ ƊƒƙƤƞùƪƓƵ ƧõƪùƼƞ!ƒ ƗƘƵ ƊƵƺƞƊ!ƒ ƙƵƓƪƞ ƗƊõƵƺƞ ƻĂƧƱ ƐõƝƊ ƗƱơǖƊ!	23	ƴùùùõƊơƞ ƘƓƜƓõƵ!ƒ	
0.45	0.60	0.98	ƊõƝƓùƼƊ ƙƓƞõǕ ƊƙƤƞƪƞ ƘƒƧƓƵƺ ƗƸƓõƮ ƗƘƵ ƊƵƺƞƊ!ƒ ƙƵƓƪƞ ƗƊõƵƺƞ ƓƼĂƧƱ ƐõƝƊ ƘƒƧõƪƼƞ!ƒ ĂƊ ƘƓơĂƧƮ!ƒ ƨõƧƱ ƜƵ	24		
0.70	0.79	0.96	ƴƜƓp ƙơƒĂ ƧõƺƞƊ :ƘƒƧõƺƞƊ!ƒ ƴƊ ƴƊƓƺƞ!ƒ ƗƘƵ ƊƵƺƞƊ!ƒ ƙƵƓƪƞ ƗƊõƵƺƞ ƓƼĂƧƱ ƐõƝƊ ăƧƤǕƒ ƘƒƧõƺƞƊ!ƒ ƘõƜƞ ƜĂƙ ƗƜƓƖƊ!	25	Ʊƕùùùư ƘƒƧõƺƞƊ!ƒ	
0.74	0.76	0.96	ƗùƜƓƖƊ! ƗƜƓp ƘƒƧõƺƞƊ ƖƙƵ ƴƊ ƴƊƓƺƞ!ƒ ƗƘƵ ƊƵƺƞƊ!ƒ ƙƵƓƪƞ ƗƊõƵƺƞ ƓƼĂƧƱ ƐõƝƊ ƴpǕƒ ƗƘƵ ƙơƒĂ ƧõƺƞƊ ƘõƜƞĂ	26		
0.61	0.83	1.00	ƗùƼƞƤƊ ƧƙƓƮùƊ ƜƊ ƘƓƊĂƵƺƊ!ƒ ƴƊƞ ƗƘƵ ƊƵƺƞƊ!ƒ ƙƵƓƪƞ ƗƊõƵƺƞ ƓƼĂƧƱ ƐõƝƊ ƗƜõƺƊ ƗƊǂƮƊ ƙõƙơƞ!	27	ƊõƊƮƜùƞ ƔƧƓƞ!ƒ	
0.60	0.86	1.00	ƗƜƧƞƞ Ơƻ ƘƒƧõƺƞƊ!ƒ ƩƓõp ƗõõǂƟƧƮ ƗƘƵ ƊƵƺƞƊ!ƒ ƙƵƓƪƞ ƗƊõƵƺƞ ƓƼĂƧƱ ƐõƝƊ	28	ƘƓƼõƧƺƞ!ƒ ƗõƒƧƞǕƒ	
0.31	0.74	0.76	Ɨ!ĂƓơƊ ƴƊ ƘƓõưƧƼ!ƒĂ ƗƊƒƪǕƒ ƧƓƜƤƒ ƗƘƵ ƊƵƺƞƊ!ƒ ƙƵƓƪƞ ƗƊõƵƺƞ ƻĂƧƱ ƐõƝƊ ƘǕĂơƞƊ!ƒ ƱƕưĂ ƙõƙơƞ	29	ƴùùùưĂ ƘƓõưƧƼ!ƒ	
0.62	0.77	0.87	ƧƓùõƞƤǓ ƗùõƓƞƊ ƗƊƱƜƊ ƱƱƤ ƊƒƙƤƞƪƒ ƗƘƵ ƊƵƺƞƊ!ƒ ƙƵƓƪƞ ƗƊõƵƺƞ ƓƼĂƧƱ ƐõƝƊ ƩƓõƖ! ƗƜƓp ƘƒƧƓƵƺƵ ƝƒƓƞƜƒ ƧõƪƼƞĂ ƘƓõưƧƼ!ƒ	30		
0.51	0.90	0.94	ƙƺƵ!ƒ ƖƙõơĂ ƘƒƧõƪƼƞ ƨƊƤ ƗƘƵ ƊƵƺƞƊ!ƒ ƙƵƓƪƞ ƗƊõƵƺƞ ƓƼĂƧƱ ƐõƝƊ	31	ƗƸƓõùùƮ ƜƓƊƜ!ƒ	
0.86	0.86	0.98	ƙƓƺƵǕƒ ƖƙƙƺƞƊ ƜƓƊƜ ƨƊƤ ƗƘƵ ƊƵƺƞƊ!ƒ ƙƵƓƪƞ ƗƊõƵƺƞ ƓƼĂƧƱ ƐõƝƊ	32		
0.86	0.86	0.98	ƙƓƺƵǕƒ ƙƙƺƞƊ ƗõƊƪ ƘƓơĂƧƮ ƨƊƤ ƗƘƵ ƊƵƺƞƊ!ƒ ƙƵƓƪƞ ƗƊõƵƺƞ ƓƼĂƧƱ ƐõƝƊ	33		

ƘùơĂƒƧƞ ƙùp ƗõƊǂ!ƒ ƖƒƙǕƒ ƴƊ ƘƒƧƖƼ!ƒ ƱƓƞƧƒ ƘǖƊƓƺƊ ƊõƝ ƜƊ Ü(9) ýĂƙƞ!ƒ ƜƊ ƱơǖƊ -0.46) ƜõùƵ ƘùơĂƒƧƞ ƙp ƜõƓƞƊ!ƒ ƴƊ ƘƒƧƖƼ!ƒ ƱƓƞƧƒ ƘǖƊƓƺƊ ƊõƝ ƜƊĂ Ü(0.89-0.31) ƜõƵ ƜõùƵ ƘùơĂƒƧƞ ƙùp ƓƝ! ƠƊƞƜƞ Ơƞ!ƒ ƙƓƺƵǕƒ ƴƊ ƘƒƧƖƼ!ƒ ƱƓƞƧƒ ƘǖƊƓƺƊ ƊõƝ ƜƊ ÝƮƧõƤĂ Ü(0.90 .(1.00-0.52)

[illegible]

[illegible] (10) [illegible].

[illegible] (10): [illegible]

[illegible]	[illegible]															
[illegible]	[illegible]	0.62														
	[illegible]	0.000														
[illegible]	[illegible]	0.54	0.77													
	[illegible]	0.000	0.000													
[illegible]	[illegible]	0.30	0.76	0.71												
	[illegible]	0.047	0.000	0.000												
[illegible]	[illegible]	0.25	0.68	0.53	0.79											
	[illegible]	0.272	0.000	0.000	0.000											
[illegible]	[illegible]	0.23	0.57	0.29	0.58	0.72										
	[illegible]	0.959	0.000	0.055	0.000	0.000										
[illegible]	[illegible]	0.54	0.94	0.78	0.87	0.84	0.71									
	[illegible]	0.000	0.000	0.000	0.000	0.000	0.000									
[illegible]	[illegible]	0.26	0.47	0.36	0.44	0.53	0.65	0.51								
	[illegible]	0.334	0.001	0.015	0.003	0.000	0.000	0.000								
[illegible]	[illegible]	0.21	0.50	0.39	0.44	0.55	0.48	0.54	0.55							
	[illegible]	0.430	0.000	0.009	0.002	0.000	0.001	0.000	0.000							
[illegible]	[illegible]	0.31	0.37	0.22	0.48	0.78	0.79	0.55	0.58	0.66						
	[illegible]	0.580	0.012	0.507	0.001	0.000	0.000	0.000	0.000	0.000						
[illegible]	[illegible]	0.45	0.40	0.21	0.23	0.38	0.27	0.42	0.41	0.39	0.47					
	[illegible]	0.002	0.006	0.163	0.136	0.009	0.073	0.004	0.006	0.008	0.001					
[illegible]	[illegible]	0.62	0.44	0.38	0.33	0.38	0.20	0.50	0.33	0.24	0.37	0.89				
	[illegible]	0.000	0.003	0.010	0.028	0.009	0.184	0.001	0.027	0.111	0.014	0.000				
[illegible]	[illegible]	0.33	0.43	0.22	0.26	0.50	0.45	0.46	0.50	0.56	0.73	0.84	0.76			
	[illegible]	0.026	0.003	0.576	0.083	0.001	0.002	0.001	0.000	0.000	0.000	0.000	0.000			
[illegible]	[illegible]	0.25	0.69	0.36	0.62	0.73	0.83	0.77	0.59	0.65	0.83	0.61	0.49	0.73		
	[illegible]	0.099	0.000	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000		
[illegible]	[illegible]	0.22	0.61	0.34	0.54	0.73	0.73	0.70	0.72	0.78	0.88	0.74	0.62	0.87	0.92	
	[illegible]	0.150	0.000	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
[illegible]	[illegible]	0.43	0.86	0.64	0.78	0.86	0.78	0.94	0.65	0.70	0.75	0.61	0.60	0.69	0.90	0.90
	[illegible]	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

[illegible] (10) [illegible] (0.94-0.43) [illegible] (0.94-0.20).

[illegible]

[illegible] (Cronbach's Alpha) [illegible]

[illegible] .(11) [illegible]

[illegible] .(11) [illegible]

[illegible]	[illegible]	[illegible]	[illegible]
22	**0.88**	0.92	[illegible]
11	**0.94**	0.94	[illegible]
33	**0.91**	**0.95**	[illegible]

[illegible] (11) [illegible] (0.95) [illegible] (0.91) [illegible] (0.94-0.92) [illegible] .(0.94-0.88)

[illegible] (SEED) [illegible]:

[illegible]:

[illegible] (SEED) [illegible] (2012) [illegible]

[illegible] (Duban, 2008) [illegible]

(2010) [illegible]

[illegible] (Simon, 2003) [illegible]

[illegible] 2061 [illegible] (Kesidou and Roseman, 2002) [illegible]

12 [illegible] (AAAS, 1990) [illegible]

[illegible] 36 [illegible]

.(8)

[illegible]

: [illegible] **(SEED)** [illegible]

:[illegible]

[illegible]

[illegible] (SEED) [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] (SEED) [illegible]

[illegible] (31) [illegible] (12) [illegible]

.(9)

:üĭǂΘǂǁǁ lƑĜk . ƒ

ýùŏǁơk ĆƒƧɳǂùh ăĂkơďž!ƒ ýŏǁơk lƧhƤh ƧĂƧďž!ƒ Ǵnj! ƾhƪ ǈďžďž Ǵnj! ǂǁŏdžƨĂ ŎǊj ǂƛơǴh!ƒ ƘďžǴp ĆĂù ư Ŏù5 ǈƥƧŪƒ Ŏ5 ǂŏďžǁz!ƒ ǂŏhƧk!ƒ ƧŏĂƱkĂ ǇŏƪơkƧŏĂƱk ƳĂƧƬďž! ĭƧƲǉ!ƒ ƧǴƱŰƒ ăĂkơďž ǂùŏƨŏǂĂ ÜŎƑǴùǉh!ƒ Ǆǁzkù!ƒ ƏƥǴhďž ýĂơ Ǆnjƨ!ƒ ƥŏơĂk! Ǵďžnjǉŏh ƫ ǴlǉĆƒƧɳƍ ƥzh ŎƑǴǉh!ƒ Ǆǁzk!ƒ ƏƥǴhďž

ƾǴƨkŰƒ ǂhƪǉ ƳǴƪơh ýƛďžkďž!ƒ ǇŏǁǁơďžǁƒƘǴhƛ ǇďžƾlơkǃƧ ƻ ƥnjh Ýýŏǁơk!ƒ ƘƒƥơĂ ƒ ǉ Ŏ5 ǴNjƧĂnjƱ ƾǴùƨkŰƒ ǂhƪǉ ƘƺǁhǂŏơÜŎƑǴǉh!ƒ Ǆǁzk!ƒ ƏƥǴhďž ĆĂ ư Ŏ5 Inter-Rater Ǵnjkǁŏďžƨ ǇŏhĂ ǂƛơǴh!ƒ ǇŏhƧǴùƱŰƒ ăĂùkơďž ýùŏǁơk lƥǴùƵǂh ǂƛơǴh!ƒ ƘďžǴp Ǵďžǂ Ü%96.4 lƒƥŰƒ ăĂkƪďž ĬǁƵ Ǵďžnjǉŏh ǂŏǁǂ!ƒ Ǆǁzkù!ƒ ƏƥǴùhďž ĆĂù ư Ŏ5 ǈƥƧŪƒ Ŏ5 ǂŏďžǁz!ƒ ǂŏhƧk!ƒ ƧŏĂƱkĂ ǇŏƪơkƧŏĂƱk ƳĂƧƬďž! ĭƧƲǉ!ƒ Intra- ŎkƒƦù!ƒ ƾǴƨkŰƒ ǂhƪǉ ƳǴƪơ ƻ ƥnjh ÝýĂŰƒ ýŏǁơk!ƒ ǇďžƧnjƬ ƧĂƧďž ƥzh ăƧƤǁ lƧďž ŎƑǴǉh!ƒ ǂù!ƥǴzďž ǄƒƥƤkùƪǴh ǁ!ƦĂ Ü%99.0 ǂhƪǉ!ƒ Ƙƺǁh ǂŏơ ÜŎǉǴƛ!ƒ ýŏǁơk!ƒĂ ýĂŰƒ ýŏǁơk!ƒ ǇŏhRater :ĬǁƵ Ňƒ ǉk Ŏk!ƒ ÜŎkƪ!ĂNj

$$\text{نسبة التوافق بين المحللين} = \frac{\text{عدد مرات الاتفاق بين المحللين}}{\text{عدد مرات الاتفاق بين المحللين} + \text{عدد مرات الاختلاف بين المحللين}} \times 100\%$$

.(12) ýĂƥɳ!ƒ Ŏ5 ǇŏhďžĂNj Ǵďžǂ ǁ!ƦĂ

.ƑǋƏƍƑǴǅǋj hƨƐƥƍǁǁƐ ƳƐƍŰ njNjǂΘǅǁǁƐ ĬǂĭǂΘǂ ǄĭǴ ĬďžĭǴǁƐNj ĬǂƐƤǁƐ ƼƑƻǂŰƐ ƒƨďž .(**12**) üNjƍǂǁǁƐ

ƍƍƳ lƐƥƪǄǅǁǁƐ	:üĭǂΘǂǁ ƼƑƻǂŰƐ ƒƨďž		ĬƏƑďžǴǁƐ !ǂyǂǁǁƐ ƍƍƑǴǅǅ
	ĬďžĭǴǁƐ	ĬǂƐƤǁƐ	
2	91.7	91.7	ǇŏďžǁzkďžǁƒƘǴɳǴkơƳƪǴǉŏǴďžhǂŏďžŏǁzk!ƒƘǴɳǴkǉ!ƒƥƥơŏ
1	95.0	97.5	ƱƬǉ!ƒǄǁzkďž!ƒƧĂƥƨƧhŏ
3	100.0	100.0	Ǉŏďžǁzkďžǁ! ǂlhǴƪ!ƒ ǂ5Ƨzďž!ƒ ƳǴkǂ!ƒ Ɲ!Ǵzŏ
5	96.5	99.4	Ǆǁzkďžǁ! ǂŏďžǁz!ƒ lǴŏơ!ƒĂ ƳǴkǂ!ƒ Ŏ5 ǂǉďžưďž!ƒ ƧǴǂ5Űƒ Ǉŏh ǂ!ƥǴhkďž!ƒ ƘǴƥůz!ƒ ƨƧhŏ
3	96.2	100.0	ǂďžǴz!ƒ lǴŏơ!ƒ Ǉďž Ǆǁzkďž!ƒ Ǵnjhƪkǂŏ Ŏk!ƒ ǂŏďžŏNjǴƨďž!ƒ ĆǴƱƤŰƒ ǂɳ!Ǵzďž ŎƵƒƧŏ
3	100.0	100.0	ǂŏƑƧďž!ƒ ƘǴǉĂǂďž!ƒ ĬǁƵ ĭĂkơŏ ƳǴkǂ!ƒ
1	100.0	100.0	ƳĂǁƪƉĂ ǂlŏƧƱ Ǉďž ƧƛǂƋh ǂďžnjďž!ƒ ĂƉ ƻƥĂďž!ƒ ĂƉ ǂǁǂƬďž!ƒ ΘƧƱŏ
3	95.2	100.0	ŎƵǴďžɳ!ƒ ýďžz!ƒ ĬǁƵ Ǉŏďžǁzkďž!ƒ ýɳƬŏ
1	86.7	100.0	Ŏ5Ƨzďž!ƒ ĆǴǉh!ƒ ƘǴŏǁďžƵ ĬǁƵ ƨǂƧŏ
1	100.0	100.0	Ŏďžǁz!ƒ ĆǴƮlkƪŰƒ ƘǴŏǁďžƵ ĬǁƵ ƨǂƧŏ
4	98.8	100.0	.ǂŏƑǴǉh!ƒ ĬǁƵ ǂďžƑǴl!ƒ ǄŏĂlk!ƒ ƘƒĂƥƉ ĬǁƵ ƥǂƋŏ
4	96.7	100.0	ǂ5Ƨzďž!ƒ ĬǁƵ ýĂƮơǁ! lƥƥzkďž!ƒ ƧƥǴƮďž!ƒ Ĭ!ƍ ƧŏƬŏ
31	**96.4**	**99.0**	Ĭǂǁǁƒ

Ü(%100.0-%91.7) LJõùƜ ƘơĂƒƧƙ ƗõƙƒŖ!ƒ ƾƓƽƙŬƒ ƔƪǉLJ LJƉ Ü(12) ýĂþƞ!ƒ LJdž Ʊơǚŏ

.(%100.0-%86.7) LJõƜ ƘơĂƒƧƙ ƗõǉjõƜ!ƒ ƾƓƽƙŬƒ ƔƪǉLJ LJƉĂ

!øƗyƛƐ ƖƑøĭƗƊŽY ƀNjøƬ Ĭʒ (**SEED**) ƱNjþƪDžƛ ƕĭƓĭþƣƗƛƐ Ʃ þNjƛƐ njNjƗƟƊŽ üĭƗƟƗ ƔƐƣƈ .ƑƨƣƑƨ

: ƕƗƊŽƑƖƗƊŽƛƐNj ƕĭƨƑƨŬƐ

:ƔƐƣŬƐ ƀƑdžƓ

YĂƧƬdž! ƗõƕõƧþƙ!ƒ ƫƧĂ!ƒ ƇƒĂƙơƒ ƗƞƧþ ăĂƙơdž ýõƛơƙ ƖƒþŪ ƓNjƧõĂƱƙ Ŏƽ ƗƛơƓƕ!ƒ ƘþǉƙƪƒǏ

ƖƒþƉ ƓùnjǉdžĂ Ɨùƪƒƫþ!ƒ YĂùƯĂdžƕ Ɨù ƛzƙdž!ƒ ƘƒĂþŪƒ LJdž þþƵ Ĭ!ƥ Džƛz!ƒ ƘƓõƛdžƵ ĬƛƵ (SEED)

ƘƓõƛdžƵ ƔƓƪƙƗŬ (2004ÜƧĂþƕ!ƒ) ƓNjƧĂƱ ƖƒþƉĂ Ü(Cornin& Padilla, 1986) ŬþõƓĂ LJõǉƧĂƗ!

ƘƓõƛdžƵ ƗƪƧƓdždž Ĭ!ƥ ĂƵþƙ Ŏƙ!ƒ ƗõdžƛƵ!ƒ yƞƒƧdž!ƒ ƯƵƕĂ ÜŎƪƓƪŪƒ yƕƓƪ!ƒ ƻƬ!ƒ ƗƕƛƱ ăþ! Džƛz!ƒ

DžĂùƛz!ƒ Džõùƛzƙ ƔƓƙƗ ƓnjǉdžĂ (1998 ÜNJƕõƓƱƤĂ ƖþƬƒĂƧÝ1994 ÜLJĂƙõƨ) ƗƛdžƓƗƙdž!ƒĂ ƗõƪƓƪŪƒ Džƛz!ƒ

DžƓùƥ Ɩ!Ŗù ƗĂ Ü(2006ÜLJĂƙõƨ) ƗõdžƛƵ!ƒ ƗõƕƧƙ!ƒĂ Džƛz!ƒ ƘƓõƛdžƵ ƔƓƙƗĂ Ü(2012 ÜNJƕõƓƱƤ) yõdžƞƛ!

.DžĂùƛz!ƒ ƔùƙƗ ăĂùƙơdž ýõƛơƙ! (Simon,2003)LJĂdžõƪ ƓNjƧĂƱ ƖƒþƉ ƗdžƞƧƙƕ (2010)NJƕõƓƱƤ

(20) LJùdž Ɨùõ!ĂŪƒ ƓnjƙƧĂƬƕ ƗǉĂƗdž!ƒĂ þõƪ YĂƧƬdž! ƗõƕõƧþƙ!ƒ ƫƧĂ!ƒ ýõƛơƙ Ɩƒþƒ (10) ƾơƛdž!ƒ

. ƒƧƬƌdž

(**SEED**) ƱNjþƪDžƛ ƕĭƓĭþƣƗƛƐ Ʃ þNjƛƐ ƀƐNjƗƟƐ ƕƜþƣ njNjƗƟƊŽ üĭƗƟƗ ƔƐƣŬ ƖƑƓƙƛƐNj ƼƣƬƛƐ ƖŰŰƣ

:!ƗyƛƐ ƖƑĭƗƊŽY ƀNjƬ Ĭʒ

:njNjƗƟƊŽƛƐ ƼƣƬ .ƈ

ƫƧĂù!ƒ ƇƒĂùƙơƒ ƗùƞƧþ ăĂƙơdž ýõƛơƙ ƖƒþŪ ăĂƙơdž!ƒ ƾþƬ LJdž ƾƖơƙ!ƓƕƗƛơƓƕ!ƒ ƘdžƓƤ

ÜƖƧùƖƽ (20) LJùdž Ɨùõ!ĂŪƒ ƓnjƙƧĂƬƕ ƗǉĂƗdž!ƒĂ Džƛz!ƒ ƘƓõƛdžƵ ĬƛƵ (SEED) YĂƧƬdž! ƗõƕõƧþƙ!ƒ

Ʃƽǉù!ƒ DžùƛƵĂ ÜDžõĂùƖƙ!ƒĂ ƩƓõƖ!ƒĂ ÜƗõƕƧz!ƒ Ɨʒƛ!ƒ Ŏƽ LJõƬƬƤƙdž!ƒ LJdž ƗƵĂdžƞdž ĬƛƵ ƓnjƯƧƵƕ

[illegible]

[illegible]

[illegible]

[illegible] (19) [illegible]

.(11) [illegible]

[illegible]

[illegible]

[illegible] (SEED) [illegible]

[illegible]

[illegible]

[illegible] Inter-Rater

[illegible] %100.0 [illegible]

[illegible] (SEED) [illegible]

[illegible] Intra-Rater [illegible]

.[illegible] %100.0 [illegible]

.(13) [illegible]

[illegible] .(13) [illegible].

[illegible]	[illegible]		[illegible]
	[illegible]	[illegible]	
10	**100**	**100**	[illegible]
1	100	100	[illegible]
2	100	100	[illegible]
1	100	100	[illegible]
3	100	100	[illegible]
1	100	100	[illegible]
1	100	100	[illegible]
1	100	100	[illegible]
9	**100**	**100**	[illegible]
1	100	100	[illegible]
1	100	100	[illegible]
1	100	100	[illegible]
1	100	100	[illegible]
3	100	100	[illegible]
2	100	100	[illegible]
19	**100**	**100**	[illegible]

[illegible] **(SEED)** [illegible]:

[illegible] (SEED) [illegible] (1219) [illegible] (SEED) [illegible] (305) [illegible] (14) [illegible] (SEED) [illegible].

ƘƒþùơĂĂ Ɨùŏǁŏƨþķ!ƒ ţ ƨĂ!ƒĂ (SEED) ƳĂƨƬďž! ĭƨƲĳ!ƒ ƨǴƱŰƒ ƘǴơƺƮ þþƵ ƴŏƨĂķ

.ǴŊĳďž ý‡ Ŏ5 ǴŊƨŏďžƨķ Ďķ Ŏķ!ƒ ýŏǁơķ!ƒ

üĭ‡ƟƗǁ ǀƐǭƟŊ ǭǭƳ	ǀƑƟƧƬǁ ǭǭƳ	!ƨŰƐ
1219	196	ƳĂƨƬďž! ĭƨƲĳ!ƒ ƨǴƱŰƒ
305	136	ƳĂƨƬďž! Ɨŏǁŏƨþķ!ƒ ţ ƨĂ!ƒ

.Ɨŏǁŏƨþķ!ƒ ţ ƨĂ!ƒĂ ĭƨƲĳ!ƒ ƨǴƱŰƒ ǇĎž ƴ‡ Ŏ5 Ƙƒƨǀ5!ƒ ǇĎž (Ɨďžþǀďž!ƒ) ƘŏĳĂķƪƒĂ

ǁøƜþǭǁ (**SEED**) ƱŊþƪøĎŽǴ ĎžĭøƽƟƗĎžǁ !Ŋø‡ƴǁ ĬĎž‡ƴĎž þĭǭƽƗ ǀƑƲƨŊƗĎž Ă‡Ƴ !ǀƟǁ þƑĭƴĎž

:ǁ‡ĎžƑǀƗĎžǁƐŊ ǁĭƨƑƨŰƐ !‡ƴǁ ǀƑĭ‡ĎžƳ !ŊƗƨþƑĎžĎž ǁƜþǭǁŊ ÛĬƋƑďžǴǁ !‡ƴƗǁ ƃŋǭƑǴĎž !ŊǀǘƗĎžƐ

ƘǴƱƪĂķďž!ƒ ĬǁƵ ĎžǴ‡ơŰƒ ƽǘƱƺ ƻþŋǁ Ŏǁƪĳ!ƒ ŊŏƨþķƒĬ Ʀ ŎƑǴƮơŰƒ ƜƦĂďžĳ!ƒ þǴďžķƵƒ Ďķ

ĎžùǁƵ!ƒ ƘǴùŏǁďžƵ ĎžŋķùƪƨǴďžďž Ɨùƞƨþ!Ă ÜŎƑǴĳǁ!ƒ ĎžǁƵķ!ƒ Ǵăþǁďž Ďžŋ‡ǘķďžƒ ƗƞƨþːǇĎž ý‡! ƗŏǁǴƪơ!ƒ

Ŏķ!ƒ Ƙƒƨǀ5!ƒĂ ǴŋķŰǴƞďžĂ Ɨŏǁ‡!ƒ ǀƒþǕƒ ĬǁƵ (SEED) ƳĂƨƬďž Ŏ5 ƘƦ5ĳ Ŏķ!ƒ ƗǁďžǴ‡ķďž!ƒĂ ƗŏƪǴƪŰƒ

:ŎķŰƒ ĂơĳƒĬǁƵ ǁ!ƦĂ ÜǴŋķŰǴƞďž! ƴǁķķ

ǁĭǴƑƨƟǁ ǀƑƲƨŊƗĎžǁ ǁƋƺ	ƥǘƗĎžŰƐ þĭǭƽƗ ǁƜþǭ
5.00-3.67	ǀƨŏǁ‡
3.66-2.34	ƗƱƪĂķďž
2.33-1.00	ƗŏĳþķĎž

ǀƑøƜþǭŊ ÛĬƋƑøďžǴǁ !‡ƴƗøǁ ǫǭƑǴĎž !Ŋ‡ƴǁ ĬĎž‡ƴĎž ƹĭƲŊƗ ǀƑƜþǭ ǀƑƲƨŊƗĎž Ă‡Ƴ !ǀƟǁ þƑĭƴĎž

ǁøƲƟǘĎžǁ ƔƐǭŬ ƑƽƺŊ ǁ‡ĎžƑǀƗĎžǁƐŊ ǁĭƨƑƨŰƐ !‡ƴǁ ǀƑĭ‡ĎžƳ ǁƨþƑĎžĎžǁ !ŊƗǴ‡Ʋ !Ŋ‡ƴǁ ĬĎž‡ƴĎž ǇĭƜŊƗ

:ǁĭƧƬǁ

ƘǴƱùƪĂķďž!ƒ ĬǁƵ ĎžǴ‡ơŰƒ ƽǘƱƺ ƻþŋǁ Ŏǁƪĳ!ƒ ŊŏƨþķƒĬ Ʀ ŎƑǴƮơŰƒ ƜƦĂďžĳ!ƒ þǴďžķƵƒ Ďķ

(ýù‡‡) ƗŏƺƮ!ƒ ƗƼƨƺ!ƒ Ŏ5 ƗƲơǘďž!ƒ ŎƑǴĳǁ!ƒ ĎžǁƵķ!ƒ ƏþǴǁďž ĎžĂǁƵ!ƒ Ŏďžǁƴďž ƻŏƲĂķ Ɨŋƨþ! ƗŏǁǴƪơ!ƒ

.ŊķŰǴŋďž! ƴǁķķ Ŏķ!ƒ Ƙƒƨǀ5!ƒĂ ŊķŰǴŋďžĂ

(SEED)

(SEED)

(SEED)

[illegible] (SEED) [illegible].

- [illegible]

[illegible]

[illegible]:

[illegible] ((SEED) [illegible] ((SEED) [illegible]

[illegible]:

1. [illegible] (15).
2. [illegible].
3. [illegible] (SEED) [illegible] (16).
4. [illegible].
5. [illegible].
6. [illegible] (SEED) [illegible].

7. [illegible] .SPSS

8. [illegible]
.(SEED) [illegible]

9. [illegible] (45) [illegible] (120) [illegible] %70
[illegible]

[illegible]

1. [illegible]

2. [illegible] (45) [illegible]
[illegible] 2012/2011.

3. [illegible] .SPSS

[illegible]:

[illegible]:

1. [illegible]

2. [illegible]

الفصل الرابع

عرض النتائج

[illegible] (SEED) [illegible]

[illegible]:

[illegible] (**SEED**) [illegible]

[illegible] (SEED) [illegible] ([illegible]) [illegible]

[illegible] 14.

[illegible] **14:** [illegible] (**SEED**) [illegible].

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	1.05	3.25	[illegible]	1	1
[illegible]	1.08	3.09	[illegible]	4	2
[illegible]	1.17	3.06	[illegible]	2	3
[illegible]	1.30	3.02	[illegible].	3	4
[illegible]	1.03	2.93	[illegible]	5	5
[illegible]	1.14	1.89	[illegible]	6	6
[illegible]	**1.13**	**2.87**			[illegible]

(SEED) [illegible] 14 [illegible]

[illegible]

[illegible]

[illegible] (3.25-1.89) [illegible]

.(1.30-1.03) [illegible]

[illegible] (SEED) [illegible]

[illegible]

.15 [illegible]

[illegible] :15 [illegible] (SEED) [illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	1.120	3.417	[illegible]	7	1	[illegible]
[illegible]	1.148	3.400	[illegible]	6	2	
[illegible]	0.972	3.325	[illegible]	3	3	
[illegible]	0.913	3.300	[illegible]	2	4	
[illegible]	1.181	3.133	[illegible]	5	5	
[illegible]	1.055	3.075	[illegible]	4	6	
[illegible]	0.994	3.067	[illegible]	1	7	
[illegible]	1.145	3.492	[illegible]	8	1	[illegible]
[illegible]	0.898	3.467	[illegible]	11	2	
[illegible]	1.024	3.400	[illegible]	12	3	
[illegible]	1.196	3.375	[illegible]	10	4	
[illegible]	1.053	3.158	[illegible]	9	5	
[illegible]	1.347	2.725	[illegible]	16	6	
[illegible]	1.295	2.692	[illegible]	13	7	
[illegible]	1.304	2.617	[illegible]	14	8	
[illegible]	1.254	2.592	[illegible]	15	9	
[illegible]	1.232	3.142	[illegible] (Lap) [illegible]	18	1	[illegible]
[illegible]	1.362	2.900	[illegible]	17	2	

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	1.055	3.383	[illegible]	20	1	[illegible]
[illegible]	1.083	3.267	[illegible]	22	2	[illegible]
[illegible]	1.175	3.075	[illegible]	19	3	
[illegible]	1.023	3.058	[illegible]	23	4	
[illegible]	1.048	3.042	[illegible]	25	5	
[illegible]	1.020	3.033	[illegible]	24	6	
[illegible]	1.157	2.800	([illegible]) [illegible]	21	7	
[illegible]	0.989	3.075	[illegible]	28	1	[illegible]
[illegible]	1.072	2.958	[illegible]	26	2	
[illegible]	1.101	2.925	[illegible]	29	3	
[illegible]	0.970	2.758	[illegible]	27	4	
[illegible]	1.206	2.313	[illegible]	35	1	[illegible]
[illegible]	1.183	2.025	[illegible]	30	2	
[illegible]	1.081	1.966	[illegible]	31	3	
[illegible]	1.144	1.937	[illegible]	32	4	
[illegible]	1.225	1.931	[illegible]	34	5	
[illegible]	1.164	1.867	[illegible]	33	6	
[illegible]	1.034	1.620	[illegible]	36	7	
[illegible]	1.059	1.431	[illegible]	37	8	

[illegible] 15 [illegible]

[illegible] (SEED) [illegible]

[illegible]

[illegible] (3.49-1.43) [illegible]
.(1.36-0.90) [illegible]

[illegible] (SEED) [illegible] (SEED) [illegible] .16 [illegible]

[illegible] :16 [illegible] .(SEED) [illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	7	[illegible]	3.60	1.07	[illegible]
2	2	[illegible]	3.61	1.00	[illegible]
3	1	[illegible]	3.53	1.04	[illegible]
4	6	[illegible]	3.38	1.06	[illegible]
5	4	[illegible]	3.07	0.93	[illegible]
6	3	[illegible]	2.97	0.99	[illegible]
7	5	[illegible]	2.89	1.09	[illegible]
8	8	[illegible]	1.66	1.20	[illegible]
[illegible]			**3.10**	**1.05**	[illegible]

[illegible] 16 [illegible]

ĦŏƧĜŏƶdž!ƒ ƘĜ5ƒƧơǉŰƒ ƘơĂƒƧķ ǈĵŏơ Ŏ5 Ü(3.70-1.66) ǈĵŏŀ ĦŏŀĜʅơ!ƒ ƘĜƱʅĂķdž!ƒ ƘơĂƒƧķĂ .(1.20-0.93) ǈĵŏŀ

Ŏùdžǁƶdž Ħùʅ ƧĜdždž ƘƒƧŏþǀķ! ĦŏƧĜŏƶdž!ƒ ƘĜ5ƒƧơǉŰƒĂ ĦŏŀĜʅơ!ƒ ƘĜƱʅĂķdž!ƒ ƔĜʅơ Dǁķ ÝĜdžǂ ƔŏķƧķ ǀĜƵƒƧdž ƴdž Ü(SEED) ƳĂƧƬdž Ŏ5 ƘƦ5ǉ Ŏķ!ƒ Dǁƶ!ƒ ƘĜŏǁdžƵ ǈĴdž Ħŏǁdžƶ ý ǂ ƘƒƧǀ5! DĂǁƶ!ƒ Ŏù5 Ĝùdžǂ ǁ ù!ƦĂ ÜǊ! Ŏdžķǉķ Ĭ Ʀ!ƒ þƶŀ!ƒ ǈĴdž ư ýǂ ĦŏŀĜʅơ!ƒ ĜnjƱĜʅĂŰ ǾǀǀĂ ǿŏ!ƨĜǉķ þĜƶŀŰƒ ƘƒƧǀ5 .17 ýĂþŋ!ƒ

ŀøƨþƑDŽDž ŀøШþƍ ǀŰƑøШDž ǀƐþŝ2ǁ ŀĭþƑĭƴDŽǁƐ ǀƑƷƐþΘǖŰƐNj ŀĭĜƑƨΘǁƐ ǀƑƯƨNjǂDŽǁƐ :17 üNjǭШǁƐ (SEED) ƱNjþʅDž Ĭƺ ǀƤǂdž ĬǂǁƐ ŀǂDŽƑǀǂDŽǁƐNj ŀĭƨƑƨŰƐ !ǂƴǁƐ ǀƑĭǂDŽƳ !NjǂƴǁƐ ĬDŽǂƴDŽ .ƑĭǁƦƑdžǂ ŀĜǂþDž ǈǁ ĬDŽǂdžǂ ăƤǁƐ üƑШDŽǁƐ DžDŽƬ !NĦƐþĭǭŝǂǁ Ƒŝƺ Nj

ŀШþƍ ǈƨþƑDŽDžǁƐ	ƺƐþΘǖŰƐ ăþƑĭƴDŽǁƐ	ƯƨNjǂDŽǁƐ ĬĜƑƨΘǁƐ	ƔþŝƧǁƐ DžNjþDžƬDž	!ǿ5þ ƔþŝƧǁƐ	ŀĜǂþǁƐ	üƑШDŽǁƐ
ĦƱʅĂķdž	0.96	3.61	þĜƬķþŰƒ ĈĂư Ŏ5 Dǁƶdž!ƒ ĜnjdžþƤķʅŏ Ŏķ!ƒ ĦŏdžŏǁƶķĦ ƘĜŏŋŏķƒƧķʅŰƒ Ŏ5Ƨƶdž!ƒ	2	1	þĜƬùùùùķþŰƒ Ŏ5Ƨƶdž!ƒ
ĦƱʅĂķdž	1.02	3.55	Ŏ5Ƨƶdž!ƒ þĜƬķþŰƒ Ŏ5 Dǁƶdž!ƒ ƧĂþ	1	2	
ĦƱʅĂķdž	1.14	3.44	Ŏ5Ƨƶdž!ƒ þĜƬķþŰƒ ýƲ Ŏ5 Ɣ!ĜƱ!ƒ ƧĂþ	3	3	
ǀƧŏŀǂ	0.92	3.73	DĂǁƶ!ƒ ǀþĜdž Ŏ5 ĦŀǁƱǁ! Ħdžƨŭ!ƒ ĦŏƑƒþŰƒ ƘƒƧĜnjdž!ƒ	5	1	Nùùdžǁƶķŏ Ĝùùdž
ǀƧŏŀǂ	0.91	3.71	DĂǁƶ!ƒ ǀþĜdž Ŏ5 ĦŀǁƱǁ! Ħdžƨŭ!ƒ Ħŏ5Ƨƶdž!ƒ ƘƒƧĜnjdž!ƒ	6	2	Ɣùùùùù!ĜƱ!ƒ
ĦƱʅĂķdž	1.18	3.38	DĂǁƶ!ƒ ǀþĜdž Ŏ5 ĦŀǁƱǁ! Ħdžƨŭ!ƒ ĦŏƵĜdžķŋŰƒ ƘƒƧĜnjdž!ƒ	4	3	DĂǁƶ!ƒ Ŏ5
ĦƱʅĂķdž	1.00	2.98	ĦùŏdžŏǁƶķĦ ĦùŏǁdžƵ!ƒ ĈĜùǉǊ ĜnjǉdžþŏƨķʅǊ Ŏķ!ƒ ĦŏdžŏǁƶķƒƧþĜƬdž!ƒ ǀƧĂƱķdž ǀƨnjŋǊĂ ĦŏdžŏǁƶķýƑĜʅĂĂ ƧŀķƤdž!ƒ ƘƒĂþǊ ĜnjǉdžĦƵĂǉķdž	8	1	ĦùùƲơŭdž!ƒ ƧĂþ Ɣùùùùŏƨŋķ!ƒĂ
ĦƱʅĂķdž	0.98	2.96	DĂùǀŏ ƔĂǁùʅƋǂ ƔƧĜùŋķ!ƒ ĈƒƧƞ Ŏ5 Ŏdžǁƶ!ƒ ƯƧƶ!ƒ ĦǀŏƧƱ ĦŏdžǁƵ ĦǀŏơƯƧƵ ĂD DžŏþǀķŀDĂǁƶ!ƒ DǁƶdžNŀ	7	2	Ŏùùùùùùùù5 .DĂǁƶ!ƒ ƩŏƧþķ
ĦƱʅĂķdž	0.94	3.10	ƔʅĜǉdž!ƒ ŎdžŏǁƶķƐ!ƒ 2pĂdž!ƒ Ŏ5 ĦŀʅĜǉdž!ƒ ĜŏŋĂ!ĂǉǂķƐ!ƒ ǀƒþD 2ŏƲĂķ	9	1	2ùùùùùŏƲĂķ
ĦƱʅĂķdž	0.87	3.07	ýƑĜùʅĂ ƧĂùƱķ ĦùŀǂƒĂdžĂ ƧùŏŏƺķƐ!ƒ Ăơǉ ĦŏŀĜŋŏǫ ƘĜNjĜŋķƒ ŎǉŀķDžŏǁƶķƐ!ƒ ĜŏŋĂ!Ăǉǂķ	11	2	ĜùùùŏŋĂ!ĂǉǂķƐ!ƒ DĂǁƶ!ƒ ƩŏƧþķ Ŏ5
ĦƱʅĂķdž	0.99	3.04	Ŏù5 ĜùŏŋĂ!ĂǉǂķƐ!ƒ 2ŏƲĂķ ĬǁƵ ĦdžƑĜƿ ƩƧþ ĦƱƤ ƦŏƽǉķĂ DžŏdžƬķ ШĜnjǉdžƒ	10	3	
ĦƱʅĂķdž	1.21	3.08	þŏŋ DĂǁƵ ƩƧþ ŝŏŀƱķ Ŏ5 Ʀŏ5ǉķ!ƒĂ ƱŏƱƤķ!ƒ ŎķǁơƧdž 2ŏƲĂķ	12	1	ƩƧþ
ĦƱʅĂķdž	1.13	3.03	DĂǁƶ!ƒ Dǁƶdž ƧĂƱķ ýơƒƧdž	17	2	DĂùùùùùùǁƶ!ƒ
ĦƱʅĂķdž	0.98	2.87	Dǁƶķ!ƒ ĦŏǁdžƵ Ŏ5 ШƨĜdžķdž!ƒ DžŏǁƶķƐ!ƒ ĦŏdžNjD	16	3	þŏŋ!ƒ
ĦƱʅĂķdž	1.07	2.87	ŎdžŏǁƶķƐ 2pĂdž Ŏ5 ШƨĜdžķdž!ƒ Dǁƶķ!ƒ 2ŏƲĂķ	14	4	
ĦƱʅĂķdž	1.07	2.83	ƘĜŋĜķǉ!ƒ ŝŏǀơķ Ʀŏ5ǉķ ƔǂƒĂķĂ ĦǉĂƧdž!Ĝŀ DžʅķķĦƱƤ þƒþƶǫ	15	5	
ĦƱʅĂķdž	1.05	2.81	ƩƧþ!ƒ ăĂķơdž ƔʅĜǉŏ Ĝdžŀ ĦƵĂǉķdž ĦǁƑʅD ΘƧƱĂ þƒþƶǫ	13	6	

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	7	18	[illegible]	2.76	1.11	[illegible]
[illegible]	1	22	[illegible]	3.73	0.94	[illegible]
	2	24	[illegible]	3.67	0.92	[illegible]
	3	25	[illegible]	3.66	1.16	[illegible]
	4	23	[illegible]	3.62	1.04	[illegible]
	5	21	[illegible]	3.47	1.09	[illegible]
	6	20	[illegible]	2.83	1.18	[illegible]
	7	19	[illegible]	2.70	1.08	[illegible]
[illegible]	1	26	[illegible]	3.80	1.04	[illegible]
	2	27	[illegible]	3.78	1.01	[illegible]
	3	32	[illegible]	3.76	1.07	[illegible]
	4	29	[illegible]	3.69	1.01	[illegible]
	5	31	[illegible]	3.67	1.03	[illegible]
	6	30	[illegible]	3.66	1.01	[illegible]
	7	28	[illegible]	3.65	1.07	[illegible]
	8	33	[illegible]	3.65	1.17	[illegible]
	9	34	[illegible]	3.64	1.22	[illegible]
[illegible]	1	41	[illegible]	2.09	1.11	[illegible]
	2	39	[illegible]	2.07	1.22	[illegible]
	3	38	[illegible]	1.98	1.06	[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
			[illegible]			
[illegible]	1.18	1.87	[illegible]	47	4	
[illegible]	1.28	1.77	[illegible]	35	5	
[illegible]	1.29	1.76	[illegible]	37	6	
[illegible]	1.15	1.62	[illegible]	44	7	
[illegible]	1.07	1.58	[illegible]	45	8	
[illegible]	1.44	1.58	[illegible]	46	9	
[illegible]	1.25	1.52	[illegible]	40	10	
[illegible]	1.27	1.46	[illegible]	43	11	
[illegible]	1.09	1.35	[illegible]	36	12	
[illegible]	1.23	1.01	[illegible]	42	13	

[illegible] 17 [illegible]

[illegible] (SEED) [illegible]

[illegible]) [illegible]

[illegible]

[illegible]

[illegible]) [illegible]

[illegible]

[illegible]

[illegible]

.(1.44-0.87) [illegible] (3.80-1.01) [illegible]

[illegible] " : [illegible]

[illegible] (**SEED**) [illegible]

[illegible]

[illegible]

.18 [illegible]

[illegible] :18 [illegible]

[illegible] (ü l l) [illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	14	[illegible]	3.73	0.58	[illegible]
2	2	[illegible]	3.67	0.60	[illegible]
3	1	[illegible]	3.67	0.71	[illegible]
4	12	[illegible]	3.67	0.48	[illegible]
5	20	[illegible]	3.53	0.50	[illegible]
6	7	[illegible]	3.53	0.63	[illegible]
7	18	[illegible]	3.47	0.63	[illegible]
8	8	[illegible]	3.40	0.72	[illegible]
9	19	[illegible]	3.40	0.62	[illegible]
10	21	[illegible]	3.33	0.48	[illegible]
11	23	[illegible]	3.33	0.80	[illegible]
12	3	[illegible]	3.27	0.69	[illegible]
13	4	[illegible]	3.20	0.84	[illegible]
14	22	[illegible]	3.20	0.66	[illegible]
15	15	[illegible]	3.07	1.01	[illegible]
16	6	[illegible]	3.00	0.83	[illegible]
17	5	[illegible]	3.00	0.74	[illegible]
18	17	[illegible]	3.00	1.04	[illegible]
19	13	[illegible]	2.93	1.01	[illegible]
20	10	[illegible]	2.93	0.94	[illegible]
21	16	[illegible]	2.93	0.94	[illegible]
22	11	[illegible]	2.80	0.99	[illegible]
23	9	[illegible]	2.13	1.10	[illegible]
[illegible]			**3.23**	**0.49**	[illegible]

[illegible] 18 [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] (3.73-2.13) [illegible] (1.10-0.48).

[illegible] " : [illegible]

[illegible] (SEED) [illegible]

[illegible]

[illegible]

[illegible]

[illegible] 19.

[illegible] :19 [illegible] (ü | |) [illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	**0.50**	**3.03**	[illegible]			**1**	**1**
[illegible]	0.51	3.69	[illegible]	3	1		
[illegible]	0.67	3.47	[illegible]	1	2		
[illegible]	0.57	3.33	[illegible]	7	3		
[illegible]	0.68	3.22	[illegible]	2	4		
[illegible]	0.58	3.04	[illegible]	4	5		
[illegible]	0.64	2.57	[illegible]	6	6		
[illegible]	0.70	2.31	[illegible]	5	7		
[illegible]	**0.59**	**2.32**	[illegible]			**2**	**2**
[illegible]	0.87	2.40	[illegible]	8	1		
[illegible]	0.78	2.27	[illegible]	10	2		
[illegible]	0.78	2.27	[illegible]	11	3		
[illegible]	0.80	2.17	[illegible]	9	4		
[illegible]	0.77	2.00	[illegible]	13	5		
[illegible]	0.55	1.93	[illegible]	12	6		
[illegible]	**0.49**	**2.75**				[illegible]	

[illegible] 19 [illegible]

[illegible]

[illegible]

D. [illegible]

[illegible]

1. [illegible]

"DžǴùpƧŪƒ DžƒþƤƙƪƒ þƶƿ!Ǎ ÜƗöǊǴƛ!ƒ ƗƿƙƧdž!ƒ Ǒ5" ƗƱơǗdž!ƒ þƶƿ! :(ƗƱƪǍƙdž) ǊöŋǍƙ ƗŋƧþ .2

ƗùƿƙƧdž!ƒ Ǒ5" ýǗþƙƪǗƒ þƶƿ!Ǎ ÜƗƶƿƒƧ!ƒ ƗƿƙƧdž!ƒ Ǒ5 "ƻöǊƮƙ!ƒ þƶƿ!Ǎ Ɨƛ!Ǵƛ!ƒ ƗƿƙƧdž!ƒ Ǒ5

ƗƪþǴƪ!ƒ ƗƿƙƧdž!ƒ Ǒ5 "ƋƿǊƙ!ƒ þƶƿ! Džƛ ÜƗƪdžǴƤ!ƒ

.ƗƶƿǴƪ!ƒ ƗƿƙƧdž!ƒ Ǒ5 "ƩǴöl!ƒ" þƶƿ! :(ƗöǊþƙdž) ǊöŋǍƙ ƗŋƧþ .3

ƗùǏdžǴǂƙdž!ƒ Džùƶ!ƒ ƘǴöǏdžƵ ƗƪƧǴdždž! DžnjƙƿǏƱ DžǍǏƶ!ƒ ǑdžǏƶdž ǊöŋǍƙ ýǴŋdž ƗŋƧþ ƒ Ƥö Ǵdžö5.Ɣ

:ǑƙǓƒ ǍơǊ!ƒ ǏǏƵ ǊþǴƶƿD ƘƼǊǋƮǍ ƗöǊþƙdž ƘǊǴǂ5 ÜDžnjƙƱơǗdž Ƙdžƙ ǴdžƿƪƠ

.Ǐ!ǍǕƒ ƗƿƙƧdž!ƒ Ǒ5 "ƘǴǊǴöƿ!ƒ ýöǏơƙ" þƶƿ! :(ƗƱƪǍƙdž) ǊöŋǍƙ ƗŋƧþ .1

ƘǴùƼöƧƶƙ!ƒ" þƶƿ!Ǎ ÜƗöǊǴƛ!ƒ ƗƿƙƧdž!ƒ Ǒ5 "ƔƧǴŋƙ!ƒ DžödžƮƙ" þƶƿ! :(ƗöǊþƙdž) ǊöŋǍƙ ƗŋƧþ .2

þùƶƿ!Ǎ ÜƗùƶƿƒƧ!ƒ ƗùƿƙƧdž!ƒ Ǒ5 "ƘƒƧöʒƙdž!ƒ Ʊƿư" þƶƿ!Ǎ ÜƗƛ!Ǵƛ!ƒ ƗƿƙƧdž!ƒ Ǒ5 "ƗöƑƒƧŋǗƒ

ƗùƿƙƧdž!ƒ Ǒù5 "ƘǴöùưƧƼ!ƒ ƴùưǍ" þùƶƿ! Džƛ ÜƗƪdžǴƤ!ƒ ƗƿƙƧdž!ƒ Ǒ5 "ɰƦǴdžǊ!ƒ ƗƸǴöƮ"

.ƗƪþǴƪ!ƒ

ǑdžǏƶdž ǊöŋǍƙ ƗŋƧþ ƘƒƧl5! ƗöƧǴöƶdž!ƒ ƘǴ5ƒƧơǊǗƒǍ ƗöƿǴƪơ!ƒ ƘǴƱƪǍƙdž!ƒ ƔǴƪơ Džƙ ÝǴdžǂ

ǇdžùƠ Ǵùnj! Ǒùdžƙǉƙ Ǒƙ!ƒ þǴƶƿǖ! ǺƖ5Ǎ ƗǏdžǴǂƙdž!ƒǍ ƗöƪǴƪǕƒ DžǏƶ!ƒ ƘǴöǏdžƵ ƗƪƧǴdždž! DžnjƙƿǏƱ DžǍǏƶ!ƒ

ǇöǃǴùŋdž!ƒ þǴùƶƿD ƘƒƧl5 ƔöƙƧƙ lǴƵƒƧdž ƴdž ÜƗöƼƮ!ƒ ƻƧʒ!ƒ Ǒ5 DžnjƙƱơǗdž Ƙdžƙ ǴdžƿƪƠ ǇöǃǴŋdž!ƒ

.20 ýǍþŋ!ƒ Ǒ5 Ǵdžǂ ǁ!ƦǍ ÜƗöƿǴƪơ!ƒ ǴnjƱǴƪǍǕ ǺƖ5Ǎ Ǻö!ƨǴǊƙ

!Ɲjǂy‖ϵ ĬĎǂyĎ ǇĭϢƝjĦ hϢβϙ lϵβƨ2‖ hĭβƑĭУĎ‖ϵ lƑƺϵβΘǻŬϵƝj hĭǴƑƨΘ‖ϵ lƑƯƨƝjĦĎ‖ϵ :20 üƝjϙϢ‖ϵ
Ďĭ‖ƑϢĎ‖ϵ ĎĎƮ ƑƝJ‖ ĬĎĦǻĦ ĬĦ‖ϵ ϙƑУǴŭ‖ ƒƨƺƝj hǂĎƑǀĦĎ‖ϵƝj hĭƨƑƨŬϵ !ǂy‖ϵ lƑĭǂĎY hƨβƑĎĎ‖ !ƝĦǴǂƯ
.ƒĭ‖ƦƑǻĦ hǴĦβĎ hĭƧƮ‖ϵ ƺβƩ‖ϵ Ĭƺ !ƝĦưΘǘĎ lĎĦ ƑĎǴƨΘ

hϢβϙ‖ϵ	ƺϵβϕøΘǻŬϵ ăβΓĭУĎ‖ϵ	Ưøøƨ ƝjĦĎ‖ϵ ĬǴƑƨΘ‖ϵ	lƑĭǂĎY hƨβƑĎĎ‖ !ƝĦǴǂƯ !Ɲjǂy‖ϵ ĬĎǂyĎ ǇĭϢƝjĦ hϢβϙ lϵβƨƺ ĎƝjĎƮĎ løĎĦ ƑĎǴƨøΘ ƑøǉϙƑУǴƝj ƑƝĦŰƑϢĎ‖ ƒƨƺƝj hǂĎƑǀĦĎ‖ϵƝj hĭƨƑƨŬϵ !ǂy‖ϵ !ƝĦưΘǘĎ	Ƴβƨ2‖ϵ !5β	hǴĦβ‖ϵ	ϙУǴ‖ϵ	üƑϢĎ‖ϵ
ĦƱƪĂkď	0.89	3.60	ĈǴŏTŰƒ ƘǴ5Ʈ ƻƮĂ ĬǀƵ Ďǀzkďƒ βƵǴƪk Ħďžŏǀzk ĦƑŏh ƐŏƝjD	1	1	ĦƲơǘď!ƒ	ĦŏƪǴƪŰƒ
ĦƱƪĂkď	0.89	3.60	ƩƒĂùơ!ƒ ĎƒβƤkùƪǴh ΘƧT!ƒ ĬǀƵ Ďǀzkďƒ βƵǴƪk Ħďžŏǀzk Ǵ5ĂƧƲ ƐŏƝjD (ĎT!ƒĂ ƧƮh!ƒĂ yďƪ!ƒĂ ƽĂƦ!ƒĂ Ʃďǀ!ƒ)	2	2		
ĦƱƪĂkď	0.66	3.20	ĬùǀƵ ĦďƑǴp ƘƒƧǴhƵ ĦƺǴŏƮ ĬǀƵ Ďǀzkďƒ βƵǴƪk Ħďžŏǀzk Ǵ5ĂƧƲ ƐŏƝjD Ƨŏƪ5k ĂD ƘǴơĂƧT ǇĂβ ĦƱŏƪh Ħŏƪơ ƘǴƲơǘď	3	3		
ĦƱƪĂkď	0.80	3.67	ƨƧùƱ βŏβơk! Ħpβ!ƒ ĎƒβƤkƪƒ ĬǀƵ Ďǀzkďƒ βƵǴƪk Ħďžŏǀzk Ǵ5ĂƧƲ ƐŏƝjD ĈǴŏTŰƒ ǇŏhlββzKď	7	1	ƻŏǉƮk!ƒ	
ĦƱƪĂkď	0.73	3.47	ƨƒƧùƱ βŏβơk! Ħpβ!ƒ ĎƒβƤkƪƒ ĬǀƵ Ďǀzkďƒ βƵǴƪk Ħďžŏǀzk Ǵ5ĂƧƲ ƐŏƝjD ĈǴŏTŰƒ Ǉŏh βơƒĂ	6	2		
ĦƱƪĂkď	0.90	3.00	ǇŏùhƻǘkùƤŰƒĂ ƝhTù!ƒ ƝùηĂD ǇƵ Ƨŏhzkǀ! Ħďžŏǀzk Ǵ5ĂƧƲ ƐŏƝjD ƘǴƵĂďη!ƒ	4	3		
ĦƱƪĂkď	0.86	2.73	ǇŏùhβùŏơĂ ƨƒƧùƱ βŏβơk ĬǀƵ Ďǀzkďƒ βƵǴƪk Ħďžŏǀzk Ǵ5ĂƧƲ ƐŏƝjD Ǵď ĦhƧηk Ŏ5 ĈǴŏTŰƒ	5	4		
lƧŏhǂ	0.69	3.73	ýǴz5Űƒ Ǉŏh ƘǴpǘz!ƒ Ƨŏƪ5k ĬǀƵ Ďǀzkďƒ βƵǴƪk Ħďžŏǀzk Ǵ5ĂƧƲ ƐŏƝjD ƧƝjƒĂƲ!ƒ ΘƧT! ĦƲơǘď!ƒ	9	1	ýƮƒĂk!ƒ	
ĦƱƪĂkď	0.71	3.67	ĬùǀƵ ĦďƑǴp ƘƒƧǴhƵ ĦƺǴŏƮ ĬǀƵ Ďǀzkďƒ βƵǴƪk Ħďžŏǀzk Ǵ5ĂƧƲ ƐŏƝjD ǴƒƧŰƒ	10	2		
ĦƱƪĂkď	0.71	3.67	ǴƒƧŰƒ ǇƵ Ƨŏhzk! ĬǀƵ Ďǀzkďƒ βƵǴƪk Ħďžŏǀzk Ǵ5ĂƧƲ ƐŏƝjD	8	3		
ĦƱƪĂkď	0.73	3.53	Ħŏhhƪ!ƒ ƘǴpǘz!ƒ ΘƧT ĬǀƵ Ďǀzkďƒ βƵǴƪk Ħďžŏǀzk Ǵ5ĂƧƲ ƐŏƝjD	11	1	ýŰβkƪŰƒ	
ĦƱƪĂkď	0.69	3.07	ĬùǀƵ ĦùďƑǴp ƘǴǉŏďƤk ĎŏβlkĬǀƵ Ďǀzkďƒ βƵǴƪk Ħďžŏǀzk Ǵ5ĂƧƲ ƐŏƝjD ĬǉβŰƒ βơ!Ǵh ĎƵƒβ ýŏ!β	12	2		
ĦƱƪĂkď	0.73	2.53	ĬùǀƵ ĦďƑǴp ƘǴǉŏďƤk ĎŏβlkĂ ĬǀƵ Ďǀzkďƒ βƵǴƪk Ħďžŏǀzk Ǵ5ĂƧƲ ƐŏƝjD (ĦηŏkǉƒĂ Ƴhƪ!ƒ) ƘǴpǘz! ƽŏpβ Ďƞj5	13	3		
ĦƱƪĂkď	0.73	2.53	ŰĦlŏpβ ĦŏƧǴzď ýƑǴƪĂ ĎβƤkƪƒ ĬǀƵ Ďǀzkďƒ βƵǴƪk Ħďžŏǀzk Ǵ5ĂƧƲ ƐŏƝjD ĭƧkď!ƒ ĎǴƲǉ!ƒ Ŏ5 ĦƑď Ǉďž Ĉƨη ĂD ƧTƵ ƳƧpD Ĭkơ ƩǴŏl!ƒ ýλď	16	1	ƩǴŏl!ƒ	
Ħŏǉβkď	0.84	2.20	ŰĦŏƧǴŏzď Ƨŏƺ ƘƒĂβD ĎβƤkƪƒ ĬǀƵ Ďǀzkďƒ βƵǴƪk Ħďžŏǀzk Ǵ5ĂƧƲ ƐŏƝjD ĎƒβpŰƒĂ ĭβŏŰƒĂ ƽƧĂ!ƒ Ʊpǘď ýλď	14	2		
Ħŏǉβkď	0.84	2.20	ŰĦùŏƧǴŏzď!ƒ ýƑǴƪĂ!ƒ ĎβƤkƪƒ ĬǀƵ Ďǀzkďƒ βƵǴƪk Ħďžŏǀzk Ǵ5ĂƧƲ ƐŏƝjD ĦηƧβď!ƒ ƘǴǉƒĂƱƪŰƒĂ ǇŏƨƒĂď!ƒĂ ƧŏƱǴƪď!ƒ ýλď	15	3		
ĦƱƪĂkď	0.58	2.73	ǇŏƧŏƺkď Ǉŏh ĦŏƱƤ!ƒ ƘǴpǘz!ƒ ǇƵ Ƨŏhzkǀ! Ħďžŏǀzk Ǵ5ĂƧƲ ƐŏƝjD	17	1	ƋhǉǉK!ƒ	
ĦƱƪĂkď	0.72	2.60	ϢƦǴďǉ!ƒ Ħ!Űβh ƘƒƧŏƺk!ƒ ƻƮĂ ĬǀƵ Ďǀzkďƒ βƵǴƪk Ħďžŏǀzk ĦƑŏh ƐŏƝjD ǴƞjǉŏhƘǴpǘz!ƒĂ	18	2		
ĦƱƪĂkď	0.89	2.53	ƽùŏƧƱ ǇƵ ƘǴpǘz!ƒ ΘƧT ĬǀƵ Ďǀzkďƒ βƵǴƪk Ħďžŏǀzk Ǵ5ĂƧƲ ƐŏƝjD	20	3	———	

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	0.89	2.40	[illegible]	19	4			
[illegible]	0.63	3.47	[illegible]	22	1	[illegible]	
[illegible]	0.76	3.20	[illegible]	21	2		
[illegible]	0.89	2.47	[illegible]	24	1	[illegible]	[illegible]
[illegible]	0.88	2.33	[illegible]	23	2		
[illegible]	0.84	2.20	[illegible]	25	1	[illegible]	
[illegible]	0.81	2.13	[illegible]	26	2		
[illegible]	0.78	2.27	[illegible]	27	1	[illegible]	
[illegible]	0.78	2.27	[illegible]	28	1	[illegible]	
[illegible]	0.58	2.07	[illegible]	29	1	[illegible]	
[illegible]	0.76	1.80	[illegible]	30	2		
[illegible]	0.94	2.27	[illegible]	31	1	[illegible]	
[illegible]	0.73	1.87	[illegible]	32	2		
[illegible]	0.73	1.87	[illegible]	33	3		

[illegible]

[illegible]

[illegible] (3.73-2.20) [illegible]

[illegible] .(0.90-0.58) [illegible]

[illegible]

[illegible] (2.47-1.80) [illegible] .(0.94-0.58)

[illegible] (**SEED**) [illegible]

(SEED) [illegible]

(SEED) [illegible]

.21 [illegible]

(SEED) [illegible] **:21** [illegible]

.[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	68.8	839	[illegible]	1
4	10.3	125	[illegible]	2
3	5.8	71	[illegible]	3
5	3.6	44	[illegible]	4
1	3.3	40	[illegible]	5
4	2.5	30	[illegible]	6
1	1.6	20	[illegible]	7
3	1.1	14	[illegible]	8
1	1.1	13	[illegible]	9
1	0.9	11	[illegible]	10
1	0.7	9	[illegible]	11
3	0.6	7	[illegible]	12
31	**99.4**	**1212**		[illegible]

[illegible] 1212 [illegible] 21 [illegible] (SEED) [illegible] 1219 [illegible] (SEED) [illegible] %99.4 [illegible] (SEED) [illegible] %68.8 [illegible] %0.6 [illegible] ."[illegible]

[illegible] (SEED) [illegible] (SEED) [illegible] .22 [illegible]

[illegible] :22 [illegible]

[illegible] (SEED)

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.9	11	[illegible] (Goals)	1	1	[illegible]	1
3.3	40	[illegible]	1	1	[illegible]	2
0.2	3	[illegible]	1	1	[illegible]	3
0.2	2	[illegible]	2	2		
0.2	2	[illegible]	3	3		
2.5	30	[illegible]	2	1	[illegible]	4
0.7	8	[illegible]	5	2		
0.4	5	[illegible]	3	3		
0.1	1	[illegible]	4	4		
0.0	0	[illegible]	1	5		
65.2	795	[illegible]	1	1	[illegible]	5
2.5	31	[illegible]	2	2		
1.1	13	[illegible]	3	3		
4.3	52	[illegible]	1	1	[illegible]	6
1.5	18	[illegible]	2	2		
0.1	1	[illegible]	3	3		
1.6	20	[illegible]			[illegible]	7

!5þ ¢ojGDŽIIE	hïƏFdGIIE ϙojFGDŽ	hGǂþIIE	!øøø5þ þƪDDŽIIE	!IΘIIE lƐþƪDDŽ	βƐþlǂIIE	hGƨdIIE hïNjƏDŽIIE
	ǂùlöSƱ LJùdž Sλǂdu ƔĂƪDĂ			ýFGƪĂĂ ǂöShPdž ƘfĂþD DžfþPkƪf ĂD ÜÖǂSơ		
8	ĬIZ LJĂdžIzkdž!f ýηTö ŎZGdžη!f ýdžz!f	1	2	ƭöS5!f ΘĂSh ƘǚǂTdž!f ýơ	7	0.6
		2	1	ǂöIZG5k ǂƱTLjD CfSηϙ Ĭ!ϙ ĂZþö	4	0.3
		3	3	ǂöLjfþödž ǂödžIZ ƘfSGös Ĭ!ϙ lĂZþ!f	3	0.2
9	ƘGùöIdžZ ĬIZ sǂSö ŎFGLjh!f ƻGTkǂŬf			ýùöIơk Ĭù!ϙ ĂZþùöĂ ÜǂùöShPdž!f ǂƱTLjŬf ĬIZ sǂSö SöSGIk!f þfþZϙĂ NjFGkLj!f Söƪ5kĂ ǂTpGLjdžĂ ƘGLjGöh!f	13	1.1
10	ƘGùöIdžZ ĬIZ sǂSö Ŏdžz!f CGƮlkƪŬf			ǂƱTùLjŬf ýǚùP LJùdž CGƮùlkƪŬf Ĭ!ϙ DžIzkdž!f ĂZþö ǂLjdžƜkdž!f	9	0.7
11	ƘfĂþD ĬùIZ þùǂƋö DžöĂùùùùùùùùlk!f .ǂöFGLjh!f ĬIZ ǂdžFGl!f	1	3	GnjköGnjLj Ŏ5Ă ƘGZĂƜĂdž!f LJöh ǂơĂk5dž!f ǂIFƪŬf DžþPkƪö ÜƘǚhGùldž!f ÜǂƱơǚdž!f) ƭĂλĂdž!f Džööլk!f ƔöGƪD DžþPkƪö	102	8.4
		2	1	ÜýGùdžZŪf ƻùIdž ÜCfþŪf Džöùölk ýηƪ ÜǂödžIz!f SöSGIk!f (LJfSpŪf Džöölk ÜŎkfR!f Džöölk!f	20	1.6
		3	4	ýǚùP LJùdž ĬLjzdž!f ĂR DžIzk!fĂ ǁfSþŬf Ă Džnj5!f sszk fRGdž! ǂIFƪD	3	0.2
		4	2	G5Iƪ lþþơdž ƻfþNjD ĬIZ DžFGp Söƺ Džöölk!f	0	0.0
12	SþGƮùdž!f Ĭ!ϙ SöTö lþþùùùùùùùzkdž!f ĬùùIZ ýĂƮùùơI! ǂ5Szdž!f	1	4	ƴùpfĂdžĂ ƘLjSkLjŬf DžfþPkƪGh ǂơh!f ƘGöIdžZ ĬIZ ýηTö ŎZGdžkηŬf ýƮfĂk!f	23	1.9
		2	3	lSfsĂù! ǂùzhGk!fĂ lsùödžkdž!f sǂfSdž!f lSGös Ĭ!ϙ ĂZþö ƘfShP!f ýþGhkĂ DžIzk!fĂ ǂöhSk!f	3	0.2
		3	1	ƘfSGös ýþGhk Ă ǂödžIZ ƘǚơShDžGöl!f Ĭ!ϙ ĂZþö	2	0.2
		4	2	ĬùIZ YǚùƱŬfĂ ǂùhkǂdž!f lSGùös ƻùöλǂk Ĭ!ϙ ĂZþö SƮz!f ƘfþηkƪDž	2	0.2

ĬùIZ ǂöĂGƪùkdž Sùöƺ lSĂƮh Ɣƪlj!f ǁ!RǂĂ ƘfSfSǂk!f ƴösĂk Ü22 ýĂþη!f LJdž Uơǚö sSùhö" SùTƋdž!Ă ĬIZŪf GNjþơ Ŏ5 %65.2 LJöh Ɣƪlj!f ljRNj ƘơĂfSk þpĂ ÜŎFGLjh!f DžIzk!f ƏþGhdž lGöơ!f LJdž DžIzkdž!f Gnjhƪkǂö Ŏk!f ǂödžöNjG5dž!f CGƱPŪf ǂη!Gzdž ŎZfSö" Dþhdž! ƴhGk!f "ǂơöơƮ!f DžöNjG5dž!f ŎFGùLjh!f DžIzkù!f ƏþGùhdž ƘfSùTƋdž ǂ5Gǂ LJDĂ .lSdž (795) ýGZ SfSǂk LJdžƜ CGη ĭR!f "ǂdžGz!f ĂD ǂùIöIp ƘfSfSǂkh GnjzödžηĂ NIkĂG5kdž ƘfSfSǂk LJdžƜ ƘCGη þp Ý(SEED) YĂSTdž Ŏ5 ǂLjdžƜdž!f .Gnj! ŎdžkLjk Ŏk!f ŎFGLjh!f DžIzk!f ƏþGhdž ƻǚkPf ĬIZ SfSǂk LJĂþh

[illegible] (SEED) [illegible]

[illegible] (SEED) [illegible]

[illegible] (SEED) [illegible] 23.

[illegible] :23 [illegible] (SEED) [illegible].

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
56.1	**171**			[illegible]	**1**
23.0	70	[illegible]	1		
13.1	40	[illegible]	2		
9.8	30	[illegible]	3		
7.9	24	[illegible]	4		
1.3	4	[illegible]	5		
1.0	3	[illegible]	6		
0.0	0	[illegible]	7		
0.3	**1**			[illegible]	**2**
0.3	1	[illegible]	1		
0.0	0	[illegible]	2		
0.0	0	[illegible]	3		
0.0	0	[illegible]	4		
0.0	0	[illegible]	5		
0.0	0	[illegible]	6		
56.4	**172**		[illegible]		

[illegible] 172 [illegible] 23 [illegible]

[illegible] 305 [illegible] (SEED) [illegible]

%56.1 [illegible] (SEED) [illegible]

[illegible] 171 [illegible] %23.0 [illegible] %0.0 [illegible] %0.3 [illegible].

[illegible] (SEED) [illegible] (SEED) [illegible] 24 [illegible].

[illegible] **:24** [illegible] **(SEED)** [illegible].

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
23.0	70	[illegible]	1	1	[illegible]	[illegible]
13.1	40	[illegible]	1	1	[illegible]	
0.0	0	[illegible]	2	2		
9.8	30	[illegible]	1	3	[illegible]	
4.9	15	[illegible]	1	1	[illegible]	
3.0	9	[illegible]	2	2		
0.0	0	[illegible]	3	3		
1.3	4	[illegible]	1	1	[illegible]	
1.0	3	[illegible]	1	1	[illegible]	
0.0	0	[illegible]	1	1	[illegible]	

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]				
0.3	1	[illegible]	1	1	[illegible]	[illegible]
0.0	0	[illegible]	1	1	[illegible]	
0.0	0	[illegible]	1	1	[illegible]	
0.0	0	[illegible]	1	1	[illegible]	
0.0	0	[illegible]	1	1	[illegible]	
0.0	0	[illegible]	2	2		
0.0	0	[illegible]	3	3		
0.0	0	[illegible]	1	1	[illegible]	
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الفصل الخامس

مناقشة النتائج والتوصيات

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ýƑǴù٦Ă!ƒ ƥƥȥƙdž ƯƧƵ ƧǒĂƮƙ ÜƧƒƧ!ƒ ƦǴƤƙƒ ÜǑƵƒƥƾǕƒ Ƨǒǂƽƙ!ƒ ÜýǴƶƽ!ƒ ýƮƒĂƙ!ƒ :Ƚǒ!Ǵƙ!ƒ ƘƒƧƥ!ƒ

.ȽƽƙƤdž!ƒ DžĂȥ!ƒ ƘŬǴƞdž Ǒƽ

ýƮùơƽ "Džnj٦ùƽlj Ƚƿƨ!ƒ ydžĂ Njȥdž ƘǴƬǴlj Ǒƽ ýĂƤƥ!ƒ yƞƬǒ" ƒƥƿdž LJƒ ǴưǒƉ ǸƑǴƙlj Ƙ!ƥ

yƒƧ!ƒ Ƚ٦ƒƧƥ!ƒ ýƒƋ٦ ýǖƤ LJdž Njǒ!ǫ ýƮĂƙ!ƒ Džƙ ǴdžƵ ƻƙƤƙ Ŭ Ƚƞǒƙlj!ƒ ljƦNjĂ ÜǏ!ĂŬƒ ȽƿƙƧdž!ƒ ǏȥƵ

ƳĂùdžƞdž LJùdž Ǐ!ĂŬƒ ȽƿƙƧdž!ƒ ǏȥƵ ýƮơ Džȥ!ƒ ƘǴǒdžƵ ƥơǴǂ ýƮƒĂƙ!ƒ LJƒ NjƞƑǴƙlj ƘơưĂƉ ǐƦ!ƒ

ăƧùƤǕƒ ƔljƒĂƞ!Ǵƿ DžǴdžƙNjǗƒ Ƚǉ Ăƒ lƧƥljĂ ƔljǴƞ ǏȥƵ ƳĂƧƬdž!ƒ ƨǒǂƧƙ ƥǂƋǒ Ǵdždž Üýǒƨơƙ!ƒ ƘƒƥơĂ

Džùȥdž!ƒ LJƉ Ǐù!ǫ ăƨùȥǒ ƥùƤĂ Ü .Ǒù|ǒƿƱƙ!ƒĂ ǑùƽƧȥdž!ƒ ljƒĂùƙơdž yǖǒdžƞ Ǒƽ LJƨƒĂƙ!ƒ ƔǴǒƺ!

Džǒùȥƙ!ƒ Ăùơlj DžNjƧǴùǂƽƉĂ DžnjƙǴNjǴƞƙǫ LJdž Ƨǒƺǒ LJ! ƔǒƧƥƙ!ƒ LJƉĂ ÜƧǒǒƺƙ!ƒ DžĂǴǀǒ (Džȥƙdž!ƒ/ƔƧƥƙdž!ƒ)

ǴƔȥ!ƒĂ ýdžȥ! Ƚǒȥƽƒƥ!ƒ ƔǴǒƩ LJdž Džȥdž!ƒ NjǒljǴȥǒ Ǵdž Ɣƿ٦ƿ ƒƥƑǴ٦ ýƨǒ Dž! ǐƥǒƙ!ƒ ƱdžȤ!ƒ LJƉĂ ÜǑƑǴljƿ!ƒ

ƪùǒ|ơƙ! ǴùnjƞƧǴƤ Ăƒ Ƚù٦ƧƥƏ!ƒ ýƤƒƥ ǴƒĂ٦ Ǵǖdžƨ!ƒ ydž ƘƒǴǴ! ýdžƵ LJǒƿ ýĂơǒ ƒƦnjƽ Ǒ٦ƒƧƥ!ƒ

.ȽǒdžǒȥƙƏ!ƒ lƥǴdž!ƒ ǴƒƧƛƉĂ Ǵǖdžƨ!ƒ LJǒƿ ƘƒƧƿƤ!ƒ ýƥǴƿƙĂ ýdžǴǂƙ!ƒ

ƥùǒǂǴƙ!ƒ lƧĂƧùư Ǒƽ (Jenkins, 2000) ƨljǂljǒƞ Ƚ٦ƒƧƥ ydž ȽǒǴơ!ƒ Ƚ٦ƒƧƥ!ƒ ƜǴƙlj ƪƽƙƙ

ƒĂdžȥdž Ǵnjƿ DžĂ|ǒ Ǒƙ!ƒ ȽƱƬljǕƒĂ Ƚǒ٦ǒƧƥƙ!ƒ ƘǴ٦ƧǴdždž!ƒ ǏȥƵ ȽǒƑǴljƿ!ƒ ƧǴǂƽǕƒ Ă Džȥƙ!ƒ ƘǴǒƧƱlj ǏȥƵ

ǴǴùljƛƉ ǑƑǴljƿ!ƒ Džȥƙ!ƒ ƏƥǴƿdž LJĂƽƱĂǒ Ǵdž Ǵƿ!ǴƩ LJǒdžȥdž!ƒ LJƉ (2002) ƘǴǂƧƿ Ƚ٦ƒƧƥ ydž ÜƩƧƒƥdž!ƒ

ǴĂùư Ǒùƽ Ƚùƛǒƥơ!ƒ ƘǴù٦ƧǴdždž!ƒĂ lƥǒƥƞ!ƒ ƥƒĂdž!ƒ LJƉ (2002) ǑljdžĂdž!ƒ Ƚ٦ƒƧƥ ydžĂ ÜDžnj٦ǒƧƥƙ

ĂùƽƱĂǒ Ǵùdž ǖǒȥƤ DžĂȥ!ƒ Ădžȥdž LJƉ (2004) ǑƿƧơ!ƒ Ƚ٦ƒƧƥ ydž ÜȽƱ٦Ăƙdž ƘljǴǂ ǑƑǴljƿ!ƒ ƜƦĂdžlj!ƒ

Ǒùdžȥdž Ƚùƽƨȥdž ȽƞƧƥ LJƉ (2005) ƯĂƵ Ƚ٦ƒƧƥ ydž ÜȽǒƽƮ!ƒ ȽƽƧƺ!ƒ Ǒƽ ȽǒƑǴljƿ!ƒ ȽǒƧƱlj!ƒ ƧǴǂƽƉ

.ȽƱ٦Ăƙdž ȽǒƑǴljƿ!ƒ DžnjƙǴ٦ƧǴdždžĂ DžĂȥ!ƒ

ƧĂƥù!ƒ ƧĂƱƙ Ǒƽ (Brewer & Daane, 2002) LJƒƥĂ ƥĂƧƿ Ƚ٦ƒƧƥ ydž ǑƑǴƙlj!ƒ ƘƽƙƤƒ

.ǑƑǴljƿ!ƒ Džȥƙ!ƒ Ƙ٦ƧǴdždž ǴǴljƛƉ ǑƙƒƦ!ƒ Džȥƙ!ƒ ǴǴ|ƙƧǫĂ LJǒdžȥƙdž! ƱƬlj!ƒĂ ǑƿǴƞǒǗƒ

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[illegible] (70) [illegible]

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- ÜƧƿǂƉ ǂǒǁƵǤƽƿ ǑƑǤǇƿ!ƒ ǅǁƶƙ!ƒ Cǎþǥƿǆ ǂƽǁƙƤǆ!ƒ ǂǒƪƒƧþ!ƒ ýơƒƧǆ!ƒ Ǒƽ ǅǍǁƶ!ƒ Ǒǆǁƶǆ ƻǒUǍƙ
.Ǒǆǒǁƶƙ!ƒ ƻpǍǆ!ƒ ǂǒưƙlǒ ǥǆ Ɣƪơ ǅUǇǆ ýǂTƿǍ

- ýǆǥùT ýǂTùƿ ǂǒƑǤǇƿ!ƒ ǂǒƧUǇ!ƒ ǇǑǆưƙ! ǂǆþƤ!ƒ ČǤǇƛƉǍ ýƿp ǇǑǆǁƶǆ!ƒ þƒþƵŰ ƱƱP ƧǒǍƱƙ
.ǑlǒƿƱƙ!ƒǍ ĭƧUǇ!ƒ ǇǑƿǇǥŋ!ƒ Ǉǆ

- ǂùƪƧǥǆǆ! ǊǒƧǍƧưù!ƒ ƘƒƧǥùǌǆ!ƒ ǅǌƿǥƪǂŰ ǅǍǁƶ!ƒ Ǒǆǁƶǆ! ǑǁǆƵ ƔǒƧþƙ Ǌǆ ƒƧƿ ƧǒǍƱƙ
.(ΣǍƧþǁ! ƱƱP Ʀǒƽǉƙ) ǑƑǤǇƿ!ƒ ΣǒƧþƙ!ƒ ƘǤǒŋǒƙƒƧƙƪ϶

:hŭĭǴþyǁɛ ŬǕɛþDžǁɛ

Ǒù5 ŀőǶƧķ!ƒ ŀǶǁƱ ýŏƮơķ Ĭǁ Ƶ Ɲŏƨǆ!ƒ Dž ǁzķ!ƒ ŀŏŋŏķƒƧķƪ DžƒþƤķƪƒ ƧǮ (2008) þőƾǆ ÜĬƪǍǆ ǍǶ

ÜǴùǊǍơǉ DžǌķǴùǊǴŋķƒǍ ƔǍùƪǴơ!ƒ lþƵǴƪǆǶ Σ ŏƧþķ!ƒ ƧƧlǆ Ǒ5 ŀơǍķƾǆ!ƒ ŀőǶƧz!ƒ ŀzǆǴŋ!ƒ

Ü156 -132 (4)1 ǕǶøĭǴþŀǁɛ Ĭøʒ Ĭøəɛþǁ Ǖɛ ƘΘǴǁɛ ǶŀǕDž ÜŀơǍķƾǆ!ƒ ŀőǶƧz!ƒ ŀzǆǴŋ!ƒ

.ǇǴǆƵ ŀơǍķƾǆ!ƒ ŀőǶƧz!ƒ ŀzǆǴŋ!ƒ

ƒøǁƑƯǁ ǶøĭŀDžyǁɛ ǶøĭǴþŀǁ ƛDžƑǆþǴ ŬƮǊ Ĭʒ !ưǆǁɛ !ɛƣƢŀƨɛ .(1985) ýþǴƵ ŀőǆǴƪ ÜĭƧǴƮǉǕƒ

ŀùzǆǴŋ ŀùőǶƧķ!ƒ ŀőǁŀ ÜlƧǊǴl!ƒ ÜlƧǍƬǉǆ Ƨőʓ ǉƒƧǍķŀþ ŀ!ǴƪƧ Ülĭǉlǁɛ Ĭʒ ĬDžŀyǁɛ !ƨʂǁɛ

.ΣǆƬ ǇőƵ

ÜŀùőƑǴǉǶ!ƒ ŀùőƧǙǉ!ƒ ƏþǴǶǆ! ǇþƧǕƒ Ǒ5 DžǍǁz!ƒ Ǒǆǁzǆ ƻőǙǍķ ŀŋƧþ .(2002) .DžƮķzǆ ÜƘǴŀƧǶ

ǑƑǴùǆǉǕƒ lþơķǆ!ƒ DžǆǕƒ ƝǆǴǉƧǶ.ŀőǉþƧǕƒ ŀzǆǴŋ!ƒ :ǇþƧǕƒ ÜlƧǍƬǉǆ Ƨőʓ ƧőķƪŋǴǆ ŀ!ǴƪƧ

Ɣùķŀǆ!ƒ Ü(ŀù5Ƨzǆ!ƒ yùǆķŋǆ ŀùǆǴƥ ǍơǉDž) 2003 DžǴzǁ! ŀőǶƧz!ƒ ŀőǆǉķ!ƒ ƧőƧlķ .(2003)

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ǶølŀDžDžǁɛ Ĭʒ !ƑyǁɛĭŀyŀǁɛǶŀΘþDž Ĭʒ lƒĭƮƑĭþǁɛ ƛǉƑǆDž þĭǊƯŀ .(2000) ƧƮǴǉ ƇǴőư ÜΘƒƧŋ!ƒ

ÜlƧǊǴùl!ƒ ÜlƧǍƬǉǆ Ƨőʓ ǉƒƧǍķŀþ ŀ!ǴƪƧ ÜǶĭƮƑĭþǁɛ ǶǕƤDžǆǁɛ ƄǊƮ Ĭʒ ǶĭDžƪƑǊǁɛ ǶĭǆƣþǕɛ

.ΣǆƬ ǇőƵ ŀzǆǴŋ ŀőǶƧķ!ƒ ŀőǁŀ

ƧĭþƣøŀþĭǊƯŀ ƱǊþƪDžǁ ăþưǆǁɛ þƑƯǕɛ (2010) þǆơǆǕǑ!ǴŋǆƒǓʂ5Ǎǆ ÜǑǶƵƨ!ƒ ǓƨƒǍ5 ÜƘƒþƧŋ

.DžőǁzķƒǍ ŀőǶƧķ!ƒ lƧƒƨǍ :ƧƬǴǉ!ƒ .(**SEED**) ǶĭŀDžƑlŀǁɛ ǶʂĭþƯǁƑǴ !ǊŀyǁɛǑù5 ΣŏƧþķ!ƒ Ǒ5 ŀőƑǴǉǶ!ƒ ŀőƧǙǉ!ƒ ƧǴŀ5Ǖ DžǍǁz!ƒ Ǒǆǁzǆ DžƒþƤķƪƒ ŀŋƧþ .(2004) .ǛƒþǶƵ ÜǑǶƧơ!ƒ

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الملاحق

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			.ƠǒơȚ!ƒ ǴnjǈǴƚdž Ǒ5 ǴnjƽǒƱĂkĂ ƚhʅǴǈdž!ƒ ǴǒɳĂ!Ăǈƚk!ƒ lƒþD ƧǴǒkPƒ .1
			.ǕǴnjǈǆdž!ƒ Ǒ5 ǴǒɳĂ!Ăǈƚk!ƒ ƻǒƱĂk Ǐǁƶ ƚdžFǴp ƩƧþ ƚƱP ǤǒƽǈǆkĂ ǅǒdžȚk .2
			.ǅǒǁzk!ƒ ǴǒɳĂ!Ăǈƚk ýƒFǴʅĂ ƧĂƱk ƚhƚƒĂdžĂ ƧǒǒƺK!ƒ Ăơǈ ƚǒhǴɳǒƒ ƘǴǋǴɳkƒ ǅǁzdž!ƒ Ǒǈhk .3
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			ǅǒǁzk!ƒ ƚǒǁdžƵ ýǒnjʅk Ǒ5 ǅǒdžȚk!ƒ ƧĂþ LJǒhD .2
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			.ǤǒƽǈǆkĂ ƱǒƱPk!ƒ Ǒkǁ ơƧdž ýǒƶƽk ýǚP LJdž Ǒʅ ǒƧþk ǕǨĂdžǈ ǄǴǈǀ .5
			.ǕƨǴdžkdž!ƒ ǅǁzk!ƒ ǅĂnjƽdžǀ þĂȚldž!ƒ Ơư ĂD .6
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			.ǎƧPǕƒ ýĂþ!ƒ Ǒ5 LJǒdžǁzdž!ƒ ýdž ýȚƒĂǁ! ǅĂǁz! ƚǒdž!ǴƵ ýþƒĂdž Ǒ5 ƚơǀ!ƒ .2
			ǅĂùǁz!ƒ ƘǕǴùɳdž ǑùƱ ƚùǒǁdžƵ ýdžƵ ƘǴTƧĂ ǤǒƽǈǆkĂ þƒþƵǫ Ǒ5 LJĂǴzk!ƒĂ ƧĂǴTk!ƒ .3 .ƚƽǁǩPdž!ƒ
			.ƚǒǁdžz!ƒ ƯĂƧz!ƒ ǅǒþlk Ǒ5 ǅĂǁz!ƒ ƘƒƧǴnjdž ƧǒĂƱkĂ ƚǒdžǈǆk ƚǒƽǒƚ .4
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			.ƚƱPǁ! ƚdžĂʅƧdž!ƒ ƻƒþǋǕƒ ƭlơk ǎþdž ƚ5Ƨzdž .6
			.ƚhǁƱ!ƒ ǅǁzk ǇƒǴkǈ Ǐǁƶ ƧƒƧI!ƒ ƔǴơȚDĂ ƧĂdžǕƒ ǄǴǒ!ĂD ƳǚƱƒ .7
			.ǴǒĂhƧkĂ ǴǒǈnjʅdžĂ ƚhǁƱ!ƒ þǴTƧǫ Ǒ5 þƵǴʅk ƘǴdžĂǁzdžǀ ǏĂhƧk!ƒ þTƧdž!ƒ þǒĂƨk .8
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4	.ƊnjƪƼǈƕ Ǐǈƶƙ!ƒ ǴǴǈƕ ǏǁƵ ǈőƊǁƶƙƊƋ!ƒ ƥƵǴƪő					
5	.ƚőƥƞ!ƒ ŀƼƧƶƋ!ƒ ǴǴǈƕ! ƒƧƪƞ ǈĂǂƙ! ƊǁƶƙƊǁ! ŀǁƕǴƪ!ƒ ƘƒƧƕƤ!ƒĂ ŀƼƧƶƋ!ƒ ƸƱĂő					
6	ƸƧǴùƶƋ ǈĴùƋ Ɲőƥ! ǴƊƕ ƚőƥƞ!ƒ ƸƧǴƶƋ!ƒ ƱƕƧ ǈƊƋ ƝǈǂƊƙ ƘƒƧƕƤƕ ƊǁƶƙƊƤƕ ƥĂƽő .ŀőƼƧƶƋ!ƒ ƝƙőǈƕƊ ƴƊ ƊǴƒĂƙő ǴƊƕ ŀőǁƕ!ƒ ƸƧǴƶƋ!ƒ ǉőǂƮƙ ƚƥǴƵǙ ǕŀǁƕǴƪ					
7	ǈőùƕ ǈƽƒĂùƙ!ƒ ǉǗƤ ǈƊƋ ŀőƼƧƶƋ!ƒ ƱĂƺư!ƒ ƴƊ Ƹőǂƙ!ƒ ǏǁƵ ǈőƊǁƶƙƊƋ!ƒ ƥƵǴƪő .ŀƊǴƒĂƊ!ƒĂ ǉƛƊƙ!ƒ ǑƙőǁƊƵ					
8	.ƊǁƶƙƊƋ!ƒ ƥǈƵ ƚƥĂƞĂƊ!ƒ ŀőƊőNjǴƼƊ!ƒ ŀőǈƕ!ƒ ƸǴƮƙǂ ŀ!ĂǴơƊƕ ƥőƥƞ!ƒ ƝƵĂư ĂƊ ƊƥƕŐ					
9	.ǴnjƕőĂƮƙ ǏǁƵ ǉƊƵőĂ ƊƱƤ!ƒ ƊőNjǴƼƊ!ƒ ǈƵ ƸƮǂő					
10	ŀǁùƮ ƘƒƦ ŀőǁőǁơ ŀőƊőǁƶƙ ƘǗǂƮƊĂ ƘǴƊnjƊ ǉǂƮ ǏǁƵ ƩƧƥ!ƒ ƳĂưĂƊ ƊƥǁŐ .ƊnjƶƥƒĂĂ ǈőƊǁƶƙƊƋ!ƒ ƚǴőơƕ					
11	.Ǵnj!ĂǴǈƙ Ǒƙ!ƒ ƚƥǴƊ!ƒ ăĂƙơƊƕ ŀőĂƥ ŀƼƧƶƊ ǁǁƙƊőŐ					

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12	[illegible]					
13	[illegible]					
14	[illegible]					
15	[illegible]					
16	[illegible]					
17	[illegible]					
[illegible]						
18	[illegible]					
19	[illegible]					
20	[illegible]					
21	[illegible]					
22	[illegible]					
23	[illegible]					
[illegible]						
24	[illegible]					
25	[illegible]					
26	[illegible]					
27	[illegible]					
28	[illegible]					
29	[illegible]					
30	[illegible]					
31	[illegible]					
32	[illegible]					
33	[illegible]					
34	[illegible]					

(5)ϿѲǂǄ

(SEED) þǒùƪ YĂƧTùǆǶ ǇǑǀơǩǆǅ!ƒ ǄĂǆƺ!ƒ Ǒǆǅƺǆ ƻǒUĂǩ ǂƞƧþ þǒþơǩ! ǂǒƽƮ!ƒ ǂUơǚǆ!ƒ ǉƒþǅ

ǂǒƑǦǋǈ!ƒ ǦǋǩƧĂƮǶ ǂǒƽƮ!ƒ ǂƼƧƺ!ƒ Ǒƽ ǑƑǦǈǶ!ƒ Ǆǅƺǩ!ƒ Əþǧǆ

ǶǅǄƑY ǉƑǄǊǂyǄ

:ǂǒǶƧǩ!ƒ ǂǒƧǒþǆ	:ǂƪƧþǆ!ƒ
:ǂǒƽƮ!ƒ ǂUơǚǆ!ƒ ǊǑƽ ƘƦƽǈ ǐƦ!ƒ ƻƮ!ƒ	
:ǂǆǅƺǆ!ƒ/Ǆǅƺǆ!ƒ Ǆƪƒ	:ǑǆǒþǦǂǕƒ ƒ ƮƤǩ!ƒ
:Ǒǆǅƺ!ƒ ýǋƌǆ!ƒ	: ǉƧǶƤ!ƒ ƘƒĂǈƪ
ǂǒƑǦǈǶǅ! ǉþǈǩƪǆ!ƒ þǒƪ ǉƧĂþ Ǒƽ ǁƧǦT - 1 ǁƧǦTǒ Ǆ! - 2	

[illegible]					[illegible]	[illegible]
4	3	2	1	0		
					[illegible]	1
					[illegible]	2
					[illegible]	3
					[illegible]	4
					[illegible]	5
					[illegible]	6
					[illegible]	7
					[illegible]	8
					[illegible]	9
					[illegible]	10
					[illegible]	11
					[illegible]	12
					[illegible]	13
					[illegible]	14
					[illegible]	15
					[illegible]	16
					[illegible]	17
					[illegible]	18
					[illegible]	19
					[illegible]	20
					[illegible]	21
					[illegible]	22
					[illegible]	23

(6) [illegible]

[illegible]

[illegible]

[illegible]

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:[illegible]	:[illegible]
:[illegible]	:[illegible]
1- [illegible] -2 [illegible]	

[illegible]					[illegible]	[illegible]	[illegible]
4	3	2	1	0			
					[illegible]	[illegible]	[illegible]
					[illegible]	[illegible]	
					[illegible]	[illegible]	
					[illegible]	[illegible]	
					[illegible]	[illegible]	

					ŧŋƧþdž!ƒ ƘƓǉƒĂƱʅŰƒĂ ǇǇőƨƒĂdž!ƒĂ ƧőƱƓʅdž!ƒ ýλdž ÜŧőƧƓőzdž!ƒ ýƑƓùʅĂ DžþƤƙùʅƍ Ĭù℮Ƶ Džzƙdž!ƒ þƵƓʅƙ ŧődžőzƙ ƑƝĂƧƱ ƇĬőNjƉ * Ŏ5 ŧƑdž ǇǇdž Ƈƨŋ ĂƉ ƧƬƵ ƔƧpƉ Ĭƙơ ƩƓől!ƒ ýλdž ÜŧlőpþŧőƧƓőzdž .ĭƧƙdž!ƒ DžƓƱǉ!ƒ		
					ŧdžƑƓp ƘƓǉődžƤƙ Džőþlƙ Ĭ℮Ƶ Džzƙdž!ƒ þƵƓʅƙ ŧődžőzƙ ƑƝĂƧƱ ƇĬőNjƉ * .ĬǉþŰƒ þơ!Ɠ DžƵƒþ ýő!þ Ĭ℮Ƶ ŧdžƑƓp ƘƓǉődžƤƙ Džőþlƙ Ĭ℮Ƶ Džzƙdž!ƒ þƵƓʅƙ ŧődžőzƙ ƑƝĂƧƱ ƇĬőNjƉ * .ŧƱơǖdž! ŧƓp lþĂþơdž ƽƑƓlơ Ĭ℮Ƶ ƘƓùǉődžƤƙ Džőþùlƙ Ă Ĭ℮Ƶ Džzƙdž!ƒ þƵƓʅƙ ŧődžőzƙ ƑƝĂƧƱ ƇĬőNjƉ * .(ŧŋőƙǉ!ƒĂ Ɣʅ!ƒ) ƘƓpǖz! ƽőpþ DžnjƼ Ĭ℮Ƶ ŧdžƑƓp	ƋǉƙǉƘ!ƒ	
					ƨùǂƧƙ ŧƑʅƉ ƟƧƱ Ĭ℮Ƶ Džzƙdž!ƒ þƵƓʅƙ ŧődžőzƙ ƑƝĂƧƱ ƇĬőNjƉ * .ƇƓőƬǕƒ ƘƓƨƮ Ĭ℮Ƶ ƨùǂƧƙ ŧƑʅƉ ƟƧƱ Ĭ℮Ƶ Džzƙdž!ƒ þƵƓʅƙ ŧődžőzƙ ƑƝĂƧƱ ƇĬőNjƉ * .ŧƧŋƙ!ƒ ǇǇdžư ƨƧƱ!ƒĂ ƘƓpǖz!ƒ Ĭ℮Ƶ ƨùǂƧƙ ŧƑʅƉ ƟƧƱ Ĭ℮Ƶ Džzƙdž!ƒ þƵƓʅƙ ŧődžőzƙ ƑƝĂƧƱ ƇĬőNjƉ * .ŧƧŋƙ!ƒ ǇǇdž lƓơĂƙʅdž!ƒ ƨƧƱ!ƒĂ ł ƒþơǕƒ Ĭ℮Ƶ	NJùùőŋĂƙ ŧƑʅǕƒ	
					DžƓùpƧǕƒ DžƒþƤƙùʅƒ Ĭ℮Ƶ Džzƙdž!ƒ þƵƓʅƙ ŧődžőzƙ ƑƝĂƧƱ ƇĬőNjƉ * .ƓnjǉőƱƧ!ƒ ǇǇĂþ ƧƓǂƼǕƒ ǇǇƵ Ƨőzƙ! DžƓùpƧǕƒ DžƒþƤƙùʅƒ Ĭ℮Ƶ Džzƙdž!ƒ þƵƓʅƙ ŧődžőzƙ ƑƝĂƧƱ ƇĬőNjƉ * .lþþơdž lƧƓz ƘƓpǖz!ƒ ǇǇƵ Ƨőzƙ! ƽùőƧƱ ǇǇƵ Ƨőʅƽƙ!ƒ Ĭ℮Ƶ Džzƙdž!ƒ þƵƓʅƙ ŧődžőzƙ ƑƝĂƧƱ ƇĬőNjƉ * .ƘƓǉődžƤƙ!Ɠ DžƓől!ƒ DžƒþƤƙùʅƓ Ƨőʅùƽƙ!ƒ Ĭ℮Ƶ Džzƙdž!ƒ þƵƓʅƙ ŧődžőzƙ ƑƝĂƧƱ ƇĬőNjƉ * .ŧƱơǖdž! ŧƓl!ƒ ƘƓǉƓő!ƒ DžƒþƤƙùʅƓ Ƨőʅùƽƙ!ƒ Ĭ℮Ƶ Džzƙdž!ƒ þƵƓʅƙ ŧődžőzƙ ƑƝĂƧƱ ƇĬőNjƉ * .ƓnjǉƵ Ŏdžǂ!ƒ Ƨőzƙ!ƒĂ ŧƱơǖdž! ŧƓp ƘƓdžĂzdž	DžƒþƤƙùùʅƒ DžƓpƧǕƒ	ŧƓdžƓǂƙdž!ƒ
					ƒþőơĂ ƒƨƒƧƱ þőþơƙ Ĭ℮Ƶ Džzƙdž!ƒ þƵƓʅƙ ŧődžőzƙ ƑƝĂƧƱ ƇĬőNjƉ * .Ɠdž ŧƧŋƙ Ŏ5 ƇƓőƬǕƒ ǇǇő þőþơƙ! ŧpþ!ƒ DžƒþƤƙʅƒ Ĭ℮Ƶ Džzƙdž!ƒ þƵƓʅƙ ŧődžőzƙ ƑƝĂƧƱ ƇĬőNjƉ * .ƇƓőƬǕƒ ǇǇő þơƒĂ ƨƒƧƱ þőþơƙ! ŧpþ!ƒ DžƒþƤƙʅƒ Ĭ℮Ƶ Džzƙdž!ƒ þƵƓʅƙ ŧődžőzƙ ƑƝĂƧƱ ƇĬőNjƉ * .ƇƓőƬǕƒ ǇǇő lþþzƙdž ƨƧƱ	ýùùőlơƙ ƘƓǉƓő!ƒ	
					ƴùdž ýùdžƓzƙ!ƒ Ĭù℮Ƶ Džzƙùdž!ƒ þƵƓʅƙ ŧődžőzƙ ƑƝĂƧƱ ƇĬőNjƉ * ƘƒƧùőǆƙdž!ƒ ƘùőλƙǇǇĂþ ŧùƓǉdž! ýƓp þơĂ ƧőǆƙdžƘƒƧőǆƙdž!ƒ: .ăƧƤǕƒ	Ʊùùùư ƘƒƧőǆƙdž!ƒ	

					[illegible]		
					[illegible]	[illegible]	
					[illegible]	[illegible]	
					[illegible]	[illegible]	
					[illegible]	[illegible]	

(7)ƼƟǂǅ

ƗùǈǆǅǴǂǅǆ!ƒĂ ƗŏùƪǴƪŨƒ ǅǈz!ƒ ƘǴǒǈǆƵ ƗƪƧǴǆǆ! ƗǈƱ!ƒ ǋŏƞĂǩ ƗƞƧþ þŏþơǩ! ƗŏƼƮ!ƒ ƗƲơǖǆ!ƒ ǉƒþǅ
ƗŏƑǴǌǉ!ƒ ǴǌǩƧĂƮǈ
ƗǆǴƵ ƘǴǆĂǈƶǆ

:ƗƪƧþǆ!ƒ	:ƗŏǈƧǩ!ƒ ƗŏƧŏþǆ
:ƗŏƼƮ!ƒ ƗƲơǖǆ!ƒ ǋŏƼ ƘƦƼǉ ǐƦ!ƒ ƻƮ!ƒ	
:ǑǆŏþǴǂŨƒ ƒ ƮƤǩ!ƒ	:Ɨǆǈǆ!ƒ/ǅǈǆ!ƒ ǅƪƒ
: ǉƧǈƤ!ƒ ƘƒĂǉƪ	:Ǒǆǈz!ƒ ýǋǆ!ƒ
ǅǈz!ƒ ƘǴǒǈǆz! ǉþǉǩƪǆ!ƒ þŏƪ ǉƧĂþ ǑƼ ǁƧǴƮ -1	
ǁƧǴƮŏ ǅ! -2	

ƗƪƧǴǆǆ! ƗƞƧþ					ǅǈz!ƒ ƘǴǒǈǆƵ ƘƒƧƮǆǆ	ƘǴǒǈǆz!ƒ ƗŏƵƧƼ!ƒ	ƘǴǒǈǆƵ ǅǈz!ƒ
4	3	2	1	0			
					ƘǴƼùƮ ƻùƮĂ Ǐùǈƶ ǅǈǩùǆ!ƒ þƵǴƪǩ Ɨǆǈŏǈǩ ƗƑǈ Ɛŏǋǅ* .ǴǴŏƮŨƒ ǅƒþƤǩùƪǴǈ ƟƧƮ!ƒ Ǐǈƶ ǅǈǩǆ!ƒ þƵǴƪǩ Ɨǆǈŏǈǩ ǴƼĂƧƲ ƐŏǋǅǄ * .(ǅƮ!ƒĂ ƧƮǈ!ƒĂ ǅǆƪ!ƒĂ ƫĂƦ!ƒĂ Ʃǆǈ!ƒ) ƩƒĂơ!ƒ ƘƒƧǴùǈƵ ƗƹǴŏƮ Ǐǈƶ ǅǈǩǆ!ƒ þƵǴƪǩ Ɨǆǈŏǈǩ ǴƼĂƧƲ ƐŏǋǅǄ * .ƧŏƪƼǩ ĂǅǄ ƘǴơĂƧƮ ǇĂþ ƗƱŏƪǈ Ɨŏƪơ ƘǴƲơǖǆ Ǐǈƶ ƗǆǴþ	ƗƲơǖǆ!ƒ	ƗŏƪǴƪŨƒ
					ƻǖǩùƤŨƒĂ ǋǈƮ!ƒ ǋƞĂǅ Ǉƶ ƧŏǈƶǈŠ! Ɨǆǈŏǈǩ ǴƼĂƧƲ ƐŏǋǅǄ * .ƘǴƵĂǆƞǆ!ƒ Ǉŏǈ ƒƨƒƧùƱ þùŏþơǩ Ǐùǈƶ ǅǈǩǆ!ƒ þƵǴƪǩ Ɨǆǈŏǈǩ ǴƼĂƧƲ ƐŏǋǅǄ * .ǴǆƗǈƧƞǩ ǑƼ ǴǴŏƮŨƒ Ǉŏǈ ƒþŏơĂ ƗùƿþƊ!ƒ ǅƒþƤǩùƪƒ Ǐǈƶ ǅǈǩǆ!ƒ þƵǴƪǩ Ɨǆǈŏǈǩ ǴƼĂƧƲ ƐŏǋǅǄ * .ǴǴŏƮŨƒ Ǉŏǈ þơƒĂ ƨƒƧƱ þŏþơǩ!	ƻŏǉƮǩ!ƒ	

Ɨʅ ƧǤǆǎǆ!ƒ ƗƞƧþ							ƘǤǓǆZ Ǆǉz!ƒ
					Ɨùpþ!ƒ ǄƒþƤķùʅƒ ǏǉZ Ǆǉzķǆ!ƒ þZǤʅķ Ɨǒǆǒǉzķ ǭ5ĂƧƲ ƐǒǊǉ * .ƇǓŤǕƒ ǇǑǂ ƖþþzķǄ ƨƧƱ þǒþơķ!		
					ǇùZ Ƨùǒǂzķ!ƒ Ǐù ǉZ Ǆǉzķǆ!ƒ þZǤʅķ Ɨǒǆǒǉzķ ǭ5ĂƧƲ ƐǒǊǉ * .ƇƒƧǓƒ ƘǤùpǔz!ƒ Ƨǒʅ5ķ ǏǉZ Ǆǉzķǆ!ƒ þZǤʅķ Ɨǒǆǒǉzķ ǭ5ĂƧƲ ƐǒǊǉ * .ƧǋƒĂƲ! ƟƧT! ƗƲơǔǆ!ƒ ýǤz5Ǖƒ ǇǑǂ ƘƒƧǤùǂZ ƗƺǤǒƮ ǏǉZ Ǆǉzķǆ!ƒ þZǤʅķ Ɨǒǆǒǉzķ ǭ5ĂƧƲ ƐǒǊǉ * .ƇƒƧǓƒ ǏǉZ ƗǆƑǤp	ýƮƒĂķ!ƒ	
					ƘǤùpǔz!ƒ ƟƧùT ǏǉZ Ǆǉzķǆ!ƒ þZǤʅķ Ɨǒǆǒǉzķ ǭ5ĂƧƲ ƐǒǊǉ * .Ɨǒǂǂʅ!ƒ ƘǤùǇǒǆƤķ Ǆǒþùǀķ ǏǉZ Ǆǉzķǆ!ƒ þZǤʅķ Ɨǒǆǒǉzķ ǭ5ĂƧƲ ƐǒǊǉ * ǏǇþǕƒ þơ!Ǥǂ ǄZƒþ ýǒ!þ ǏǉZ ƗǆƑǤp ƘǤùǇǒǆƤķ Ǆǒþǀķ Ă ǏǉZ Ǆǉzķǆ!ƒ þZǤʅķ Ɨǒǆǒǉzķ ǭ5ĂƧƲ ƐǒǊǉ * .(ƗƞǒķǇ!ƒĂ Ɣǂʅ!ƒ) ƘǤpǔz! ƾǒpþ Ǆǌ5 ǏǉZ ƗǆƑǤp	ýǓþķʅǕƒ	
					ƘƒĂþǊ ǄþƤķùʅƍ ǏǉZ Ǆǉzķǆ!ƒ þZǤʅķ Ɨǒǆǒǉzķ ǭ5ĂƧƲ ƇǏǒǊǉ * .ǄƒþpǕƒĂ ǐþǒǕƒĂ ƾƧĂ!ƒ Ʊpǔǆ ýƛǆ ǗƗǒƧǤǒzǆ Ƨǒƺ ýƑǤʅĂ!ƒ ǄþƤķʅƍ ǏǉZ Ǆǉzķǆ!ƒ þZǤʅķ Ɨǒǆǒǉzķ ǭ5ĂƧƲ ƇǏǒǊǉ * ƗƞƧþǆ!ƒ ƘǤǇƒĂƱʅǕƒĂ ǇǑƨƒĂǆ!ƒĂ ƧǒƱǤʅǆ!ƒ ýƛǆ ǗƗǒƧǤǒzǆ!ƒ ýƑǤùʅĂ ǄþƤķʅƍ ǏǉZ Ǆǉzķǆ!ƒ þZǤʅķ Ɨǒǆǒǉzķ ǭ5ĂƧƲ ƇǏǒǊǉ * ƗƑǆ ǇǄǆ Ƈƨƞ ĂǊ ƧTZ ƔƧpǊ Ǐķơ ƩǤǒ!ƒ ýƛǆ ǗƗǀǒpþ ƗǒƧǤǒzǆ .ǐƧķǆ!ƒ ǄǤƲǇ!ƒ Ǒ5	ƩǤǒ!ƒ	
					ǇǑùǂ ƗùǒƱƤ!ƒ ƘǤùpǔz!ƒ ǇZ Ƨǒǂzķǉ! Ɨǒǆǒǉzķ ǭ5ĂƧƲ ƐǒǊǉ * .ǇǑƧǒƺķǆ ƘƒƧùǒƺķ!ƒ ƻùƮĂ ǏǉZ Ǆǉzķǆ!ƒ þZǤʅķ Ɨǒǆǒǉzķ ƗƑǒǂ ƐǒǊǉ * ǤǌǇǑǂ ƘǤpǔz!ƒĂ ǈƦǤǆǇ!ƒ Ɨ!Ǖþǂ ƘǤùǇǒǆƤķ Ǆǒþùǀķ ǏǉZ Ǆǉzķǆ!ƒ þZǤʅķ Ɨǒǆǒǉzķ ǭ5ĂƧƲ ƐǒǊǉ * .ƗƲơǔǆ! ƗǉǤp ƖþĂþơǆ ƾƑǤǀơ ǏǉZ ƗǆƑǤp ƘǤùpǔz!ƒ ƟƧùT ǏǉZ Ǆǉzķǆ!ƒ þZǤʅķ Ɨǒǆǒǉzķ ǭ5ĂƧƲ ƐǒǊǉ * .ƗƲơǔǆ Ƨǒƺ ăƧƤǊ ƗƒþơǕ ǤǌǆǒǆǇzķ ƾǒƧƱ ǇZ	ƌǂǇķ!ƒ	
					ǄǤùpƧǕƒ ǄƒþƤķʅƒ ǏǉZ Ǆǉzķǆ!ƒ þZǤʅķ Ɨǒǆǒǉzķ ǭ5ĂƧƲ ƐǒǊǉ * .Ɩþþơǆ ƖƧǤzǂ ƘǤpǔz!ƒ ǇZ Ƨǒǂzķǉ! ǄƒþƤķùʅǂ Ƨǒʅ5ķ!ƒ ǏǉZ Ǆǉzķǆ!ƒ þZǤʅķ Ɨǒǆǒǉzķ ǭ5ĂƧƲ ƐǒǊǉ *	ǄƒþƤķùùʅƒ ǄǤpƧǕƒ	ƗǉǆǤǂǆ!ƒ

ƘǴŏǁďžƵ Ďǁž!ƒ			ƗƞƨƥƗ Ɨƪǁǐďž!ƒ				
		.ǴŋǉƵ Ǒďž!ƒ ƨǒǅž!ƒĂ ƗƲơǕďǁ! ƗǁǅǴƿ ƘǴďĂǁƶďž					
	ýǜùùùǒǁơǩ ƘǴǉǴǁ!ƒ	* ƐǒŊƉ ƲƨĂƜǴ ƗǒďǒǁƶǨ ƥƵǴǈǨ ƥƶǁǨďž!ƒ ǏǁƵ ǨƪǈǨ!ƒ ƨǒǈǴǁ ǕƤƥƤǨùǈ ďžƒƥƤǨ .ƗƲơǕďǁ! ƗǁǅǴǀ!ƒ ƘǴǉǴǁ!ƒ * ƐǒŊƉ ƲƨĂƜǴ ƗǒďǒǁƶǨ ƥƵǴǈǨ ƥƶǁǨďž!ƒ ǏǁƵ ƮǴǒƬ ƗƷƨƮǴǁƵ ƘƒƨǴùǀƵ .ƘƒƨǒǈǨ!ƒ ĂƉ ƘǴơĂƨƬ!ƒ ƽǒƨƱ ǇƵ ďǒŊǴƽďž ƥǴƞǒǕ ďƥƤǨǈǨ				
	ƱǁǜùùùǔƢ ƘƒƨǒǮǨďž!ƒ	* ƆǏǒŊƉ ƲƨĂƜǴ ƗǒďǒǁƶǨ ƥƵǴǈǨ ƥƶǁǨďž!ƒ ǏùǁƵ ǗďǴƶǨ!ƒ ǗùďǗ ƘƒƨǒǮǨďž!ƒ ƘǒǁƛǨ ǇĂƥ ƗǁǅǴǉďǁ! ǗǁǴƿ ƥơƒĂ ƨǒǮǨďž :ƘƒƨùǒǮǨďž!ƒ ƘǴùǁǅǵƵ .ăƨƤǕƒ * ƆǏǒŊƉ ƲƨĂƜǴ ƗǒďǒǁƶǨ ƥƵǴǈǨ ƥƶǁǨďž!ƒ ǏǁƵ ǗďǴǗ ƥǁƵ ǏǁƵ ǨƥùƵ .ǗƿǕƒ ǏǁƵ ƥơƒĂ ƨǒǮǨďž ƘǒǁƛǨĂ ƗǁǅǴǉďǁ! ƗǁǅǴƿ ƘƒƨǒǮǨďž				
	ďǒďžƬǜùùùǨ ƔƨǴŋǨ!ƒ	* ƐǒŊƉ ƲƨĂƜǴ ƗǒďǒǁƶǨ ƥƵǴǈǨ ƥƶǁǨďž!ƒ ǏǁƵ ǗďžŋƘǴùďĂǁƶďž!ƒ .ƗǉǒƶďžƗǁǂƬďž ƥǒƥơǩ! ƗƻǁǨƤďž ƨƥǴƬďž ǇďžƘǒƶǒƜƒǁ				
	ƘǴǜùƻǒƨƶǨ!ƒ ƗǒƑƒƨŋƕ	* ƆǏǒŊƉ ƲƨĂƜǴ ƗǒďǒǁƶǨ ƥƵǴǈǨ ƥƶǁǨďž!ƒ ǏǁƵ ƟƨƬ ƗǒƻǒƗ ƩǴǒƿ .ƗǉƨŋǨ ǑƼ ƘƒƨǒǮǨďž!ƒ				
	ƴǜùùùǔĂ ƘǴǒǔƨƼ!ƒĂ	* ƐǒŊƉ ƲƨĂƜǴ ƗǒďǒǁƶǨ ƥƵǴǈǨ ƥƶǁǨďž!ƒ ǏǁƵ ƨǴùǉǨƤƒ ƗǁǇùǈǕƒ .ƘǕĂơǨďž!ƒ ƮǉǔĂ ƥǒƥơǨ Ɨ!ĂǴơďž ǗďǁƘǴǒǔƨƽ!ƒĂ * ƆǏǒŊƉ ƲƨĂƜǴ ƗǒďǒǁƶǨ ƥƵǴǈǨ ƥƶǁǨďž!ƒ ďžƒƥƤǨǈƒ ƮùƮƤ ƘƒƨǴùǉǅǉ ǊǴùǨǉ!ƒ ƨǒǈƽǨĂ ƘǴǒǔƨƽ!ƒ ƨǴǒǨƤǕ Ɨǒ!ǴǨǨďž ƗďžƲǉďž .ƩǴǀǁ! ƗǁǅǴƿ				
	ƗƷǴǒǜùùƬ ǟƦǴďžǉ!ƒ	* ƐǒŊƉ ƲƨĂƜǴ ƗǒďǒǁƶǨ ƥƵǴǈǨ ƥƶǁǨďž!ƒ ǏǁƵ ƽùǁƤ ƘƒƨǒǈùƽǨ .ƥƶǅ!ƒ ǀƥǒơĂ * ƆǏǒŊƉ ƲƨĂƜǴ ƗǒďǒǁƶǨ ƥƵǴǈǨ ƥƶǁǨďž!ƒ ǏùǁƵ ƽùǁƤ ǟƦǴùďžǉ ƥǴƶǅǕƒ ǀƥƥƶǨďž. * ƆǏǒŊƉ ƲƨĂƜǴ ƗǒďǒǁƶǨ ƥƵǴǈǨ ƥƶǁǨďž!ƒ ǏǁƵ ƽǁƤ ƬǴƨĂơǴƘ .ƥǴƶǅǕƒ ƥƥƶǨďž ƗǒďǁǈǨ				

(8) [illegible]

[illegible]

[illegible]	[illegible]	[illegible]
[illegible] .(Goals) [illegible]	[illegible]	1
[illegible]	[illegible]	2
[illegible]	[illegible]	3
[illegible]	[illegible]	4
[illegible]	[illegible]	5
[illegible]	[illegible]	6
[illegible]	[illegible]	7

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	8
[illegible]	[illegible]	9
[illegible]	[illegible]	10
[illegible]	[illegible]	11
[illegible]	[illegible]	12

(9) [illegible]

[illegible]

[illegible]

[illegible]	[illegible]	[illegible]
1	[illegible]	.(Goals)[illegible]
2	[illegible]	[illegible]
3	[illegible]	[illegible]
4	[illegible]	[illegible]
5	[illegible]	[illegible]
6	[illegible]	[illegible]
7	[illegible]	[illegible]
8	[illegible]	[illegible]
9	[illegible]	[illegible]
10	[illegible]	[illegible]

ýƞƪ Ǝ Ǝ ƪ k!ƒ	ƗǒƑǤǇƿ!ƒ ƏþǤƕdž	ƗǒƑǤǇƿ!ƒ ƏþǤƕdž ǇǒdžǕ k ƘƒƧƬƋdž
11	Ǐ ù ƎƵ ƗdžƑǤǀ!ƒ ǅǒǍǀk!ƒ ƘƒǍþ ǅ Ǐ ƎƵ þǂƋǒ .ƗǒƑǤǇƿ!ƒ	ýƞƪ ÜƗǒdžƎƶ!ƒ ƧǒƧǤǀk!ƒ ÜƘǘƕǤǀdž!ƒ ÜƗƱơǘdž!ƒ)ƽǍǍǍdž!ƒ ǅǒǒǀk!ƒ ƔǒǃǤƪǅ ǅþƤkƪǒ .(ǇƒƧpǕ̄ƒ ǅǒǒǀk ÜǑkƒƦ!ƒ ǅǒǒǀk!ƒ ÜýǤdžƵǕ̄ƒ ƻƎdž ÜǤƒþǕ̄ƒ ǅǒǒǀk .Ǥƽƪ ǉþþơdž ƻƒþǋǅ Ǐ ƎƵ ǅƑǤp ƧǒƸ ǅǒǒǀk!ƒ .ǤǌkǒǤǌǈ Ǒ5Ǎ ƘǤƵǍ ư Ǎdž!ƒ ǇǒƕƗơǍkƽdž!ƒ ƗƎƑƪǕ̄ƒ ǅþƤkƪǒ .ƒƦǤdž! ƗƎƑƪǅ ýǘƤ ǇǅdžǏ ǈƶdž!ƒ ǍƦ ǅƎƶk!ƒǍ ǁ ƒƧþǗƒ Ǎ ǅǌǆ!ƒ ƨƨƶk
12	ýǍƮ ùơƎ! ǉþþƶkdž!ƒ ƧþǤƮdž!ƒ Ǐ!ƍ ƧǒƬǒ ƗƼƧƶdž!ƒ Ǐ ƎƵ	ƘƒƧǤǒƨ ýþǤƕk Ǎ ƗǒdžƎƵ ƘǘơƧƕ ǅǤǒǀ!ƒ Ǐ!ƍ ǍƵþǒ ƧƮƶ!ƒ ƘƒþƞkƪdžƎ Ǐ ƎƵ ƳǘƱǕƒǍ ƗƕǂǀdžƎ ǀƧǤǒƨ ƻǒǆǂk Ǐ!ƍ ǍƵþǒ ýþǤùƕkǍ ǅǒùƎƶk!ƒǍ ƗùǒƕƧk!ƒ ǀƧƒƨǍ! ƗƶƕǤk!ƒǍ ǀƨǒdžƶkdž!ƒ ƨǂƒƧdž!ƒ ǀƧǤǒƨ Ǐ!ƍ ǍƵþǒ .ƘƒƧƕƤ!ƒ .ǑƵǤdžƶƞǕƒ ýƮƒǍk!ƒ ƴþƒǍdžǍ ƘǇƧƶǇǕƒ ǅƎƒƤkƪǤƕ ƗơƕƎ!ƒ ƘǤǒƎdžƵ Ǐ ƎƵ ƴƞƬǒ

(10) !5þ 5Θ‡DŽ

DŽlz!f ҞĜöĺďžŽ ĬĺŽ ŊĴfĂƙơƒĴ ŁηƧþ! þŏʅ ҮĂƧŢďž! ŁŏĥŏƧþk!f ţ ƧĂ!f ăĂƙơďž ýŏĺơk lfþD

Łŏ!ĂŰf ĜnjkƧĂŢĥ

DŽlz!f ҞĜöĺďžŽ	ŁŏŽƧ5!f ҞĜöĺďžz!f	ҞfƧŢƋďž!f
ŁŏʅĜʅŰf	ŁƲơǖďž!f	ĈĜöŢŰf Łη!Ĝzďž Ŏ5 ýĜz5 ý‡Ţĥ ƱfƧƤǉŰf ĬĺŽ DŽlzďž!f þŽĜʅk* ƧŢĜhďž ý‡Ţĥ ΣfĂơ!f DžfþƤkʅf ĬĺŽ DŽlzďž!f þŽĜʅk * ƧŢĜhďž Ƨŏƹ ý‡Ţĥ ΣfĂơ!f DžfþƤkʅf ĬĺŽ DŽlzďž!f þŽĜʅk *
	ƻŏǉŢk!f	ҞĜďžĂĺzďž! ĜhŏkƧk Ŏηnjǉďž ý‡Ţĥ ƯƧk5ŏ LJD ĬĺŽ DŽlzďž!f þŽĜʅk *
	ýŢfĂk!f	ŁŽĂǉkďž ýƑĜʅĂĥ ҞĜďžĂĺzďž!f ýþĜhk ĬĺŽ DŽlzďž!f þŽĜʅk *
	ýŰþkʅŰf	ΣĜʅD ĬĺŽ Łfþơ Űf ƔĜhʅD ĂD ҞĜhĥʅďž!fĂ ҞĜơĂƧŢ!f Džŏþlk ĬĺŽ DŽlzďž!f þŽĜʅk * lþĂþơďž ƭƑĜlơ þùďžkzk ĜnjǉŰ ýƋĜʅk!f ýưĂďž ҞŰŰþkʅŰf ŁŏpfþŢďžĥ Łơĥ!f ĬĺŽ DŽlzďž!f þŽĜʅk * Ƨŏĥ‡ ý‡Ţĥ ŎŢƤŢ!f Dž‡ơ!f ĬĺŽ
	ΣĜŏl!f	Ĝŏďž‡ ҞĜƲơǖďž!f LJŏŏzk! ҞfĂþŰf DžfþƤkĜh Łþơ!f ƻŢĂ ĬĺŽ DŽlzďž!f þŽĜʅk *
	ƋhǉkĮf	ýǖùƤ LJùďž (ŊƑĜkǉ!fĂ ƔĜhʅŰf) ŁŏĺhlkʅĹďž!f ҞĜpǖz!f ypĂk ĬĺŽ DŽlzďž!f þŽĜʅk * .ҞĜƲơǖďž!f LJďž ҞĜďžĂĺzďž!f ĬĺŽ ƋhǉkĮf Łpþ DžĂlkĂ ÜĈĜöŢŰf Łη!Ĝzďž
	ŁĺƑʅŰf ŊŏηĂk	.lþ‡ƋĹďž!f Ƨŏƹ ƧĂďžŰf lƧĜǫ ĬĺŽ DŽlzďž!f þŽĜʅk *
	DžĜpƧŰf DžfþƤkʅf	DžĜpƧŰf ŁƱʅfĂĥ ҞĜpǖz!fĂ ҞĜƲơǖďž!fĂ ƧĜ‡5Űf LJŽ Ƨŏĥz!f ĬĺŽ DŽlzďž!f þŽĜʅk * .ҞĜďžĺ‡!f LJďž Ƨƛ‡D
Łĺďž‡Ĝ‡ƙďžĮf	ҞĜǉĜŏĥ!f ýŏĺơk	ҞĜùŽĂďžηďž LJŏĥ Ł!ĂnjʅĥŁơưkďž Ƨŏƹ LJĜzďž ĂD ƭƧƱ þĜηŏǫ ĬĺŽ DŽlzďž!f þŽĜʅk * .ҞĜöưƧ5!fĂ ҞĜzpĂk!fĂ ҞŰŰþkʅŰf ĈĜǉĥ Ĭ!ǫ ĭþƋk Ŏk!f ҞĜǉĜŏĥ!f LJďž
	ҞfƧŏʒkďž!f Ʊĥư	Ĭlhk LJD ƔηŏŎk!f ҞfƧŏʒkďž!f LJďž ƧĜökƤfĂ ýďžfĂz!f þŏþơk ĬĺŽ DŽlzďž!f þŽĜʅk ĭ * .(ĈĜŢlkʅf) Ʀŏ5ǉk ýηD LJďž Ƨŏʒk LJD ƔηŏŎk!f ǁĺk LJďžĂ ŁkhĜǍ
	ƔƧĜηk!f DžŏďžŢk	.ŊƑĜkǉ!f ƧŏƧlk! ҞĜöƱzďž!f yƋďžη ҞĜöĺďžz! ƱŏƱƤk!f ĬĺŽ DŽlzďž!f þŽĜʅk *
	ŁŏƑƧηŰf ҞĜ5ŏƧzk!f	.ăƧƤŰf ҞfƧŏʒkďž!f Ł!Űþĥ Ƨŏʒkďž!f ƻŢĂ ĬĺŽ DŽlzďž!f þŽĜʅk *
	ҞĜöưƧ5!f yưĂ	lþùŽĜl‡ ƧŏʅùƨkĂD ΘƧŢù! ҞùpƋďž ýĂùhp Ĭ!ǫ ýŢĂk!f ĬĺŽ DŽlzďž!f þŽĜʅk * .yʅĂD ҞfĈĜŢlkʅŰ ƻǉŢù!f LJùďž Łfþơ Űf ĂD ĈĜöŢŰf ý‡ ýďžŢk ҞĜďžŏĺzk ĈĜǉĥ ĬĺŽ DŽlzďž!f þŽĜʅk * .ŊʅŜǉ .ŁŏpĂƛĂ!f ΣŏʅƋk! ҞĜöưƧ5!f ƧĜhƤf ĬĺŽ DŽlzďž!f þŽĜʅk *
	ǕǕĜďžǉ!f ŁƹĜöŢ	ŁŏưĜöƧ!f ĂD Łŏďžǖ‡!f ĂD ŁŏƑĜöƨŏ5!f ҞfƧŏʅ5k!f ĈĜǉĥĂ ƻŢĂ!f ĬĺŽ DŽlzďž!f þŽĜʅk * .lƧŢĜhďž ĜnjkƲơǖďž LJ‡ďžŏ Ű Ŏk!f ƧŊfĂƲ!fĂ ŁďžƲǉŭ! ҞfĈĜŢùlkʅŰfĂ ҞĜùηĜkǉ!Ĝh ƋhǉkĮf ýηD LJďž ǕǕĜďžǉ!f DžþƤkʅf ĬĺŽ DŽlzďž!f þŽĜʅk * .ŁƱƱƤďž!f

(**11**) !ƽþ ƼƟǂƊŽ

ǴnjķƧĂƮùŀ ƊǇż!ƒ ƘǤŏǇƌžƵ ǏǇƵ ǋƑƒĂķơƒ ǂŋƧþ! þŏƪ ƳĂƧƬƌž! ǂŏŀŏƧþķ!ƒ ƫƧĂ!ƒ ăĂķơƌž ýŏǇơķ ǉƒþƊ

ǂŏƑǴnjǈ!ƒ

ƘƒƧƬƋƌž!ƒ	ǂŏƵƧƽ!ƒ ƘǤŏǇƌż!ƒ	ƊǇż!ƒ ƘǤŏǇƌžƵ
ǅǤŏƬŰƒ ǂŋ!Ǵżƌž Ŏƽ ýǤżƽ ý‡Ƭŀ ƱƒƧƤǉŰƒ ǏǇƵ ƊǇżķƌž!ƒ þƵǤƪķ* ƧƬǤŀƌž ý‡Ƭŀ ƩƒĂơ!ƒ ƊƒþƤķƪƒ ǏǇƵ ƊǇżķƌž!ƒ þƵǤƪķ * ƧƬǤŀƌž Ƨŏƺ ý‡Ƭŀ ƩƒĂơ!ƒ ƊƒþƤķƪƒ ǏǇƵ ƊǇżķƌž!ƒ þƵǤƪķ *	ǂƱơǘƌž!ƒ	ǂŏƪǤƪŰƒ
ƘǤƌžĂǇżƌžǇ! ǤŀŏķƧķ Ŏŋnjǉƌž ý‡Ƭŀ ƯƧķƽŏ ǇǊ ǏǇƵ ƊǇżķƌž!ƒ þƵǤƪķ *	ƻŏǉƮķ!ƒ	
ǂƵĂǉķƌž ýƒǤƪĂŀ ƘǤƌžĂǇżƌž!ƒ ýþǤŀķ ǏǇƵ ƊǇżķƌž!ƒ þƵǤƪķ *	ýƮƒĂķ!ƒ	
ƾƒǤǀơ ƩǤƪƊ ǏǇƵ ǂƒþơŰƒ ƔǤŀƪƊ ĂƊ ƘǤŀŀƪƌž!ƒĂ ƘǤơĂƧƬ!ƒ ƊŏþǀķƘ ǏǇƵ ƊǇżķƌž!ƒ þƵǤƪķ * ǉþĂþơƌž ǏùǇƵ þƌžķżķ ǴnjǉŰ ýƋǤƪķ!ƒ ƴƯĂƌž ƘŰŰþķƪŰƒ ǂŏƿƒþƮƌžŀ ǂơŀ!ƒ ǏǇƵ ƊǇżķƌž!ƒ þƵǤƪķ * Ƨŏŀ‡ ý‡Ƭŀ ŎƮƤƬ!ƒ Ɗ‡ơ!ƒ	ýŰþķƪŰƒ	
.Ŏƌž‡ ý‡Ƭŀ ƘǤƱơǘƌž!ƒ ǇǊŏżķ! ƘƒĂþŰƒ ƊƒþƤķƪǤŀ ǂþơ!ƒ ƻƮĂ ǏǇƵ ƊǇżķƌž!ƒ þƵǤƪķ *	ƩǤŏǀ!ƒ	
ǂùŋ!Ǵżƌž ýǘƤ ǇǊƌž (ǋƑǤķǉ!ƒĂ ƔǤŀƪŰƒ) ǂŏǇŀǀķƪƌž! ƘǤþǘż!ƒ ƴþĂķ ǏǇƵ ƊǇżķƌž!ƒ þƵǤƪķ * .ƘǤƱơǘƌž!ƒ ǇǊƌž ƘǤƌžĂǇżƌž!ƒ ǏǇƵ ƋŀǉƙķƒƋ ǂþþ ƊǇĂǀķĂ ǗǅǤŏƬŰƒ	ƋŀǉƙķƒƋ	
Ƨƛ‡Ɗ ƊǤþƧŰƒ ǂƱƪƒĂŀ ƘǤþǘż!ƒĂ ƘǤƱơǘƌž!ƒĂ ƧǤ‡ƽŰƒ ǇǊƵ ƧŏŀżƘ!ƒ ǏǇƵ ƊǇżķƌž!ƒ þƵǤƪķ * .ƘǤƌžǇ‡!ƒ ǇǊƌž	ƊǤþƧŰƒ ƊƒþƤķƪƒ	
ǇǊùƌž ƘǤùƵĂƌžŋƌž ǇǊŏŀ ǂ!Ăǉƪŀ ǂơƴķƌž Ƨŏƺ ǇǊǤżƌž ĂƊ ƾƧƱ þǤŋŏǫ ǏǇƵ ƊǇżķƌž!ƒ þƵǤƪķ * .ƘǤŏƴƧƽ!ƒĂ ƘǤżþĂķ!ƒĂ ƘŰŰþķƪŰƒ ǅǤǉŀ Ǐ!ǫ ǐþƋķ Ŏķ!ƒ ƘǤǉǤŏŀ!ƒ	ƘǤǉǤŏŀ!ƒ ýŏǇơķ	ǂǇƌžǤ‡ķƌž!ƒ
ǂķŀǤƛ ǏǀŀķǇǊ ƔŋŏŎķ!ƒ ƘƒƧŏƺķƌž!ƒ ǇǊƌž ƧǤŏķƤƒĂ ýƌžƒĂż!ƒ þŏþơķ ǏǇƵ ƊǇżķƌž!ƒ þƵǤƪķ ǐ * .(ǅǤƮǀķƪƒ) ƦŏƽǉķýŋƊ ǇǊƌž ƧŏƺķǇǊ ƊƔŋŏ Ŏķ!ƒ ǁŏķ ǇǊƌžĂ	ƘƒƧŏƺķƌž!ƒ Ʊŀƴ	
.ǋƑǤķǉ!ƒ ƧŏƧǀķ! ƘǤŏƱżƌž!ƒ ýƌžŋ ƘǤŏǇƌžż! ƱŏƱƤķ!ƒ ǏǇƵ ƊǇżķƌž!ƒ þƵǤƪķ *	ƔƧǤŋķ!ƒ ƊŏƌžƮķ	
.ǂƪǤþ ǂŏƽŏ‡ ǂ!ǗþŀƧŏƺķƌž!ƒ ƻƮĂ ǏǇƵ ƊǇżķƌž!ƒ þƵǤƪķ *	ǂŏƒƧŋŰƒ ƘǤƽŏƧżķ!ƒ	
ƘƒǅǤƮùǀķƪŰ ǉþƵǤǀ‡ ƧŏƪƽķĂƊ ƟƧƬ! ƘþƋƌž ýĂķþ Ǐ!ǫ ýƮĂķ!ƒ ǏǇƵ ƊǇżķƌž!ƒ þƵǤƪķ * .ƴƪĂƊ .ǋƪƽǉ ƻǉƮ!ƒ ǇǊƌž ǂƒþơŰƒ ĂƊ ǅǤŏƬŰƒ ý‡ ýƌžƬķ ƘǤƌžŏǇżķ ǅǤǉǤŀ ǏǇƵ ƊǇżķƌž!ƒ þƵǤƪķ * .ǂŏþĂĂ!ƒ ƩŏƪƋķ! ƘǤŏƯƧƽ!ƒ ƧǤŀķƤƒ ǏǇƵ ƊǇżķƌž!ƒ þƵǤƪķ *	ƘǤŏƯƧƽ!ƒ ƴƯĂ	
ǂŏùƯǤŏƧ!ƒ ĂƊ ǂùŏƌžǘ‡!ƒ ĂƊ ǂùŏƑǤŏƨŏƽ!ƒ ƘƒƧŏƪƽķ!ƒ ǅǤǉǤŀĂ ƻƮĂ!ƒ ǏǇƵ ƊǇżķƌž!ƒ þƵǤƪķ * .ǁƧƬǤŀƌž ǴnjķƱơǘƌž ǇǊ‡ƌžŏ Ǘ Ŏķ!ƒ ƧǋƒĂƱ!ƒĂ ǂƌžƱǉǘ! ƘƒǅǤƮùǀķƪŰƒĂ ƘǤùŋǤǉ!Ǥŀ ƋùŀǉƙķƒƋ ýùŋƊ ǇǊùƌž ƜƦǤƌžǉ!ƒ ƊƒþƤķƪƒ ǏǇƵ ƊǇżķƌž!ƒ þƵǤƪķ * .ǂƱƱƤƌž!ƒ	ƜƦǤƌžǉ!ƒ ǂƺǤŏƮ	

(**12**) ƼƟǂǎ

(**SEED**) ƽǓǎǂƴƫƐ ƽǓƠƥǂƫƐ ƥǓǋƯǂǋ ǎǓ ƨƟǂ ƷǋƥƢǎƫ ăƥƜǎƫƐ ƥƑƯǕƐ

(13) ƽƟǂǅ

(SEED) ƷǐǅǂƴǁƧ ƷǐǠƥǂǁƧ ƥǐǋǇǂǋ ǅǍǐ ƨƟǂ ƱǋƥƔǅǁ ƷǐǠǐƥƳǂǁƧ ƓƥǋǁƧ

(**14**) ƽƟǂǇ

ǅǙǇǀƟǇǁ ƥƑǇƨƉǓ ǊǇƏƑƽ

üǇỵǁ ǅǇƒǀǇ	ƫ ƬǇǂǁ	!ƨǕǁ
ǁǍǆƧǒ!ƒ ƚƶǆǓƞ	ǓǊƪǒƧƥƙ Ɣǒ!ǃƪƒǍ ǅǍǁƶ!ƒ ǆǋǓǈǆ	ƻǁƤ ǑǈǇ ǇƪƠ ƥǍǆƠǆ .ƥ
ǁǍǆƧǒ!ƒ ƚƶǆǓƞ	ǓǊƪǒƧƥƙ Ɣǒ!ǃƪƒǍ ǅǍǁƶ!ƒ ǆǋǓǈǆ	ƚǈǒǓƱƤ ƥǆƠǆ ƳƒƥǈƵ.ƥ.Ɗ
ǁǍǆƧǒ!ƒ ƚƶǆǓƞ	ǓǊƪǒƧƥƙ Ɣǒ!ǃƪƒǍ ǅǍǁƶ!ƒ ǆǋǓǈǆ	ǀƥƬƒǍƧ ƴƬǒƾ ǅǒǋƒƧǈƒ.ƥ.Ɗ
ǁǍǆƧǒ!ƒ ƚƶǆǓƞ	ƩƾǇ ǅǍǁƵ	ƚ!ƒƨƺ ǍǈƊ ƚǒǍǓƶǆ .ƥ
ǁǍǆƧǒ!ƒ ƚƶǆǓƞ	ǅǒǍǀǨǍ ƩǓƿ	ǇǒƾǒƧƬ!ƒ ƴǓƜǈ.ƥ
ǁǍǆƧǒ!ƒ ƚƶǆǓƞ	ǅǒǍǀǨǍ ƩǓƿ	ǓƱƵ ǑǈǇ ƥǒƒƨ .ƥ
ǓǅǆƧ!ƒ/ǅǒǁƶǨ!ƒǍ ƚǒǈƧǨ!ƒ ƚǒƧǑƥǆ	ǓǊƪǒƧƥƙ Ɣǒ!ǃƪƒǍ ǅǍǁƶ!ƒ ǆǋǓǈǆ	ǇǑƥǒƶƪ!ƒ ǇǑƪƠ .ƥ
ǓǅǆƧ!ƒ / ǅǒǁƶǨ!ƒǍ ƚǒǈƧǨ!ƒ ƚǒƧǑƥǆ	ƚǆǓƵ ǅǍǁƵ	ƚƽƥƒǍƬ!ƒ ƜǓǒƧ ƻƧƬǆ!ƒ
ǓǅǆƧ!ƒ / ǅǒǁƶǨ!ƒǍ ƚǒǈƧǨ!ƒ ƚǒƧǑƥǆ	ƚǆǓƵ ǅǍǁƵ	ƥǆƠ!ƒ ƧǒǈƵ ƚƽƧƬǆ!ƒ
ƥǈƧƒ / ǅǒǁƶǨ!ƒǍ ƚǒǈƧǨ!ƒ ƚǒƧǑƥǆ	ǓǊƪǒƧƥƙ Ɣǒ!ǃƪƒǍ ǅǍǁƶ!ƒ ǆǋǓǈǆ	ǀƧƥǓǈƵ ǅƨǓƠ .ƥ
ƥǈƧƒ / ǅǒǁƶǨ!ƒǍ ƚǒǈƧǨ!ƒ ƚǒƧǑƥǆ	ǓǊƪǒƧƥƙ Ɣǒ!ǃƪƒǍ ǅǍǁƶ!ƒ ǆǋǓǈǆ	ƔǍƞƧ!ƒ ƇǓƪǒǆ .ƥ
ǁǍǆƧǒ!ƒ ƚƶǆǓƞ	ǓǊƪǒƧƥƙ Ɣǒ!ǃƪƒǍ ƘǓǒƜǓǒƧ ǆǋǓǈǆ	ƔǓǒƬ!ƒ ƦǓƶǆ .ƥ
ǁǍǆƧǒ!ƒ ƚƶǆǓƞ	ǓǊƪǒƧƥƙ Ɣǒ!ǃƪƒǍ ǅǍǁƶ!ƒ ǆǋǓǈǆ	ƚǁƽƒǍǈ ǇǑƪƠ ƥǒ!Ǎ .ƥ
ǁǍǆƧǒ!ƒ ƚƶǆǓƞ	ǓǊƪǒƧƥƙ Ɣǒ!ǃƪƒǍ ǅǍǁƶ!ƒ ǆǋǓǈǆ	ǐƧǆƶ!ƒ ǑǈǓǋ ƴǓƬǍ .ƥ
ǁǍǆƧǒ!ƒ ƚƶǆǓƞ	ǓǊƪǒƧƥƙ Ɣǒ!ǃƪƒǍ ǅǍǁƶ!ƒ ǆǋǓǈǆ	ǐǍǓǂǁǆ ƴǓǆƈ .ƥ

(**15**) ȽƟǂǱ

ƚþǚƶ!ƒ ƘƒƦ ƘǴǌɳǈ! ǁ ǍǳƧŏ!ƒ ƚƶǳǴɳ ǿǉþ ǇǳƚǍƶǉǳ!ƒ ƚǳǌǳ!ƒ ǿŏǌʅƙ ƔǴƙǂ

(**16**) ƼƟǂǍ

ǂþǚz!ƒ ƘƒƦ ƘǴnjŋǃ! ǄǒǃzƘ!ƒĂ ǂǒƕƧƘ!ƒ ǂǒƧǒƥǆ ýƕþ Ǉǆ ǂĂzƕǆ!ƒ ǂǆnjǆ!ƒ ýǒnjƪƘ ƔǴƘǂ

Abstract

Al-Obidallah. Tamara Awad. A Project For Enhancement and Development of Science Education In Jordan: An Analytical and Evaluative Study in the Light of Constructivism Principles and Science Processes. PhD dissertation. Supervisor: Prof. Ghazi Rawaqeh

The purpose of this study is to investigate the level knowledge of science teachers about Use of Science Education, enhancement and Development (SEED) method as well as exploring the degree of practicing teaching based on constructivists approach. Moreover, investigating the inclusion of the related literature of SEED to those principles. Further, the study sought to explore the degree of practicing teaching based on science processes and if the training shops contained the basic science processes and SEED principles.

The books sample of the study consisted of the literature review of SEED and the training workshops of the project as well as a random sample of (450) male and female teachers working in this project and (120) male and female teachers to explore their level of knowledge after executing the project. (15) Male and female teachers who had high scores on the questionnaire were selected to explore the degree of the actual practice of teaching based on constructivist approach and teaching based on science processes through classroom observation.

Reliability was calculated through raters as well as validity between raters as well as internal consistency for the classroom observation tools then checking agreement through Capa coefficient. With regard to the questionnaire a list of SEED project domains was prepared and rated to explore the degree of knowing concepts and skills carried out in the project then means and standard deviations as a whole were calculated then frequencies and percentages were used for the analysis unit of

constructivist principles through analyzing the related literature of the project and analyzing science processes for the training workshops.

The findings in general indicated that the degree of knowing the concepts and main ideas of SEED by science teachers was in an average level with a mean of (3.31) and a standard deviation of (0.57) on the scale as a whole. With regard to the degree of practicing the skills of SEED project the results showed that it was in an average level with a mean of (3.00) and a standard deviation of (0.69) on the scale as a whole. The findings showed that the degree of guiding students by teachers to practice basic science processes as a whole was in an average level with a mean of (2.75) and standard deviation of (0.49). With regard to the degree of practicing constructivist approach was in an average level as a whole with a mean of (3.22) and standard deviation of (0.49). The inclusion of SEED to the basic science processes according to content analysis as high.

The study recommended the use of the list of science processes within its indicators and including it in SEED project training shops, as well as the list of constructivist principles and including it in the literature of SEED. Moreover, calling science teachers in different educational stages to employ science processes and constructivist principles as well as reconsidering the preparation of the project to achieve balance and comprehensive aspects in both theoretical and practical aspects for all the topics

Key words: A Project For Enhancement and Development Of Science Education In Jordan: An Analytical and Evaluative Study In The Light of Constructivism Principles and Science Processes , Constructivist Learning Principle, Science Process Skills, content analysis.